

**ENERGY ENGINEERING ANALYSIS PROGRAM
EIGHTH US ARMY, KOREA**

VOLUME I

EXECUTIVE SUMMARY

FINAL REPORT

AUGUST 1981

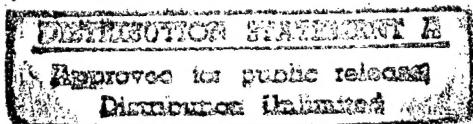
19971023 092

PREPARED UNDER

CONTRACT NO. DACA 84-79-C-0182

WITH

**THE CORPS OF ENGINEERS
PACIFIC OCEAN DIVISION**



BY

PRC SYSTEMS SERVICES COMPANY

AND

M&E PACIFIC, INC.

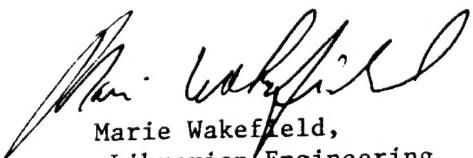


DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
P.O. BOX 9005
CHAMPAIGN, ILLINOIS 61826-9005

REPLY TO
ATTENTION OF: TR-I Library

17 Sep 1997

Based on SOW, these Energy Studies are unclassified/unlimited.
Distribution A. Approved for public release.



Marie Wakefield,
Librarian Engineering

**ENERGY ENGINEERING ANALYSIS PROGRAM
EIGHTH US ARMY, KOREA**

VOLUME I

EXECUTIVE SUMMARY

FINAL REPORT

AUGUST 1981

PREPARED UNDER

CONTRACT NO. DACA 84-79-C-0182

WITH

**THE CORPS OF ENGINEERS
PACIFIC OCEAN DIVISION**



BY

PRC SYSTEMS SERVICES COMPANY

AND

M&E PACIFIC, INC.

TABLE OF CONTENTS

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	INTRODUCTION	1-1
1.1	Energy Engineering Analysis Program	1-1
1.2	Consultant's Involvement	1-1
1.3	EEAP Reports	1-1
1.3.1	Program Documents	1-1
1.3.2	Study Reports	1-1
2.0	SUMMARY	2-1
2.1	Energy Engineering Analysis Program	2-1
2.1.1	Projected Energy Savings	2-1
2.1.2	Programmed ECIP Construction	2-2
2.2	Audit Findings	2-3
2.2.1	Energy Savings Program in Progress	2-3
2.2.2	End-Use Analysis	2-4
3.0	PROCEDURE	3-1
3.1	Data Gathering/Audit Phase	3-1
3.2	Analysis Phase	3-1
3.2.1	Preselection and Predesign of Modifications	3-1
3.2.2	Calculating Savings, Costs, and Ratios	3-2
3.3	Programming and Reports	3-2
3.3.1	Project Definition	3-2
3.3.2	Programming	3-3
3.3.3	Reports	3-3
4.0	MAJOR FINDINGS AND RESULTS	4-1
4.1	Description of Major ECIP Modifications	4-1
4.1.1	EMCS	4-1
4.1.2	Clock Thermostats with Outside Air Override	4-1
4.1.3	Insulation, Weather Stripping, and Caulking	4-1
4.1.4	Window Treatment	4-4
4.1.5	Lighting	4-4
4.1.6	Boiler Improvement	4-4
4.1.7	Project Data	4-5
4.2	Maintenance and Repair/Minor Construction	4-5
4.3	Utilities and Distribution Systems	4-6
4.3.1	Electrical	4-6
4.3.1.1	Transformers	4-6
4.3.1.2	Power Factor Correction	4-6
4.3.1.3	Motor/Load Matching	4-6
4.3.2	Water and Sewage Systems	4-7
4.4	Projects Investigated But Not Recommended	4-7
4.4.1	Conversion to Fuel Oil Heating in Relocatable Barracks	4-7
4.4.2	Waste Heat Recovery - 500-Man Mess Hall	4-7
4.4.3	Waste Heat Recovery - Diesel Generators	4-7
4.4.4	Chilled Water Storage	4-8

TABLE OF CONTENTS (Continued)

<u>Section</u>	<u>Title</u>	<u>Page</u>
4.4.5	Hot Water Storage	4-8
4.4.6	Central Steam/Hot Water Boilers	4-8
4.5	Solar Applications	4-9
4.5.1	Savings	4-10
4.5.2	Costs	4-10
4.5.3	Evaluation	4-11

LIST OF ILLUSTRATIONS

<u>Figure</u>	<u>Title</u>	<u>Page</u>
2-1	Total EUSA Energy Consumption and Projected Savings . . .	2-1
2-1-1	Total Saving Profile	2-2
2-2	Project Submittals by Fiscal Year	2-3
2-3	EUSA Energy Consumption	2-4
2-4	End-Use Analysis	2-5
4-1	EMCS Hardware Layout	4-2
4-2	Clock Thermostat Diagram	4-3
4-3	Solar Collector Geometry	4-9

LIST OF TABLES

<u>Table</u>	<u>Title</u>	<u>Page</u>
1-1	Report Format	1-2
4-1	Boiler Improvements, Yongsan Garrison	4-9

1.0 INTRODUCTION

1.1 ENERGY ENGINEERING ANALYSIS PROGRAM

Executive Order 12003, dated 19 July 1977, set forth national goals in energy conservation and provided specific guidance to Federal agencies for reduction of energy consumption. The Army Energy Plan, published in February 1978, similarly set up goals for the Army. Succeeding publications and procedures established specific programs and the Energy Engineering Analysis Program (EEAP) evolved as the vehicle for generating documentation for energy conserving construction projects. In parallel, the Congress has authorized funds for such projects under the Energy Conservation Investment Program (ECIP).

1.2 CONSULTANTS' INVOLVEMENT

In September 1979, the Pacific Ocean Division (POD), Corps of Engineers, contracted with PRC Systems Services Company and M&E Pacific, Inc. (a joint venture) to perform Energy Engineering Analyses for 19 Eighth U.S. Army (EUSA) installations. The Final Report for the Program was submitted in April 1981.

1.3 EEAP REPORTS

1.3.1 Program Documents

The primary product of an EEAP is the preparation of Project Development Brochures (PDB's) and DD Forms 1391, Military Construction Project Data. These are the vehicles for processing budget requests for ECIP funding. Forty-five sets of PDB's and Forms 1391 have been submitted under this contract.

1.3.2 Study Reports

In addition to the budget documents, 10 volumes of technical reports have been published. This volume is the Executive Summary for the entire program. Table 1-1 lists all volumes in the report, arranged by facility engineer areas and covering the 19 individual installations.

Table 1-1. Report Format

ENERGY ENGINEERING ANALYSIS PROGRAM
EIGHTH U.S. ARMY, KOREA

<u>VOLUME NO.</u>	<u>TITLE</u>
I	EXECUTIVE SUMMARY
II	SEOUL Yongsan Garrison K-16 Airfield
III	UIJONGBU Camp Red Cloud Camp Stanley
IV	TONGDUCHON Camp Casey Camp Hovey H-220 Heliport
V	SONGSANDONG Camp Howze Camp Edwards Camp Pelham Camp Kittyhawk JSA MAC HQ Swiss-Swede Camp
VI	PYONGTAEK Camp Humphreys
VII	CHUNCHON Camp Long
VIII	TAEGU Camp Henry Camp Carroll Camp Walker
IX	PUSAN Hialeah
X	APPENDICES <ul style="list-style-type: none"> A Computer Programs B Cost Estimates C Unit IBOP Calculations D Audit Forms E Similar Building Lists F Waste in Operations G Utilities and Distribution Systems H Projects Investigated But Not Proposed I Solar Applications

2.0 SUMMARY

2.1 ENERGY ENGINEERING ANALYSIS PROGRAM

The overall goal of the Army Facility Energy Plan is to reduce energy consumption at military installations by 25% of that consumed in FY75 as the base year. The results of the Energy Engineering Analysis Program, increments A & B, for 19 installations of the 8th Army in Korea show that 18.2% of the reduction could be achieved by maintaining existing energy conservation programs and implementing the Energy Conservation Investment Program (ECIP) developed to date.

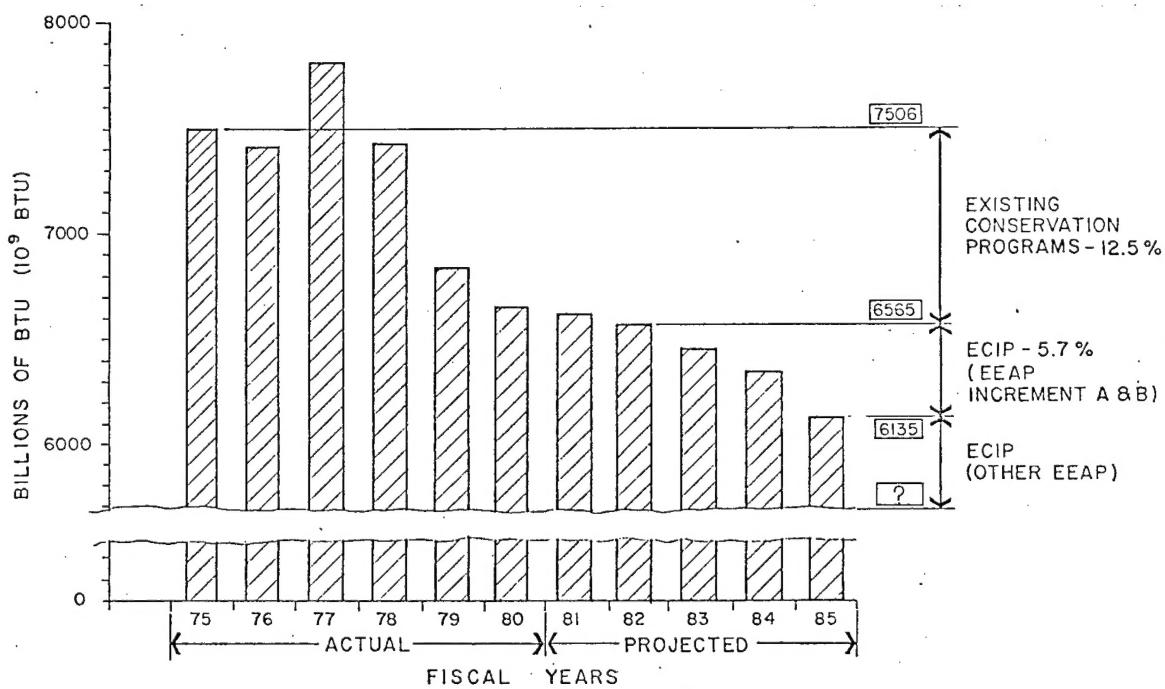


Figure 2-1. Total EUSA Energy Consumption and Projected Savings

The remaining reduction, as noted in Figure 2-1, would be achieved by the implementation of other energy conservation investments which would be identified after conducting other increments of the Energy Engineering Analysis Program.

2.1.1 Projected Energy Savings

The direct saving in Operation and Maintenance Costs due to ECIP projects will be \$9.9 million in the first year after construction of all projects. This saving is expected to increase thereafter as energy cost escalate.

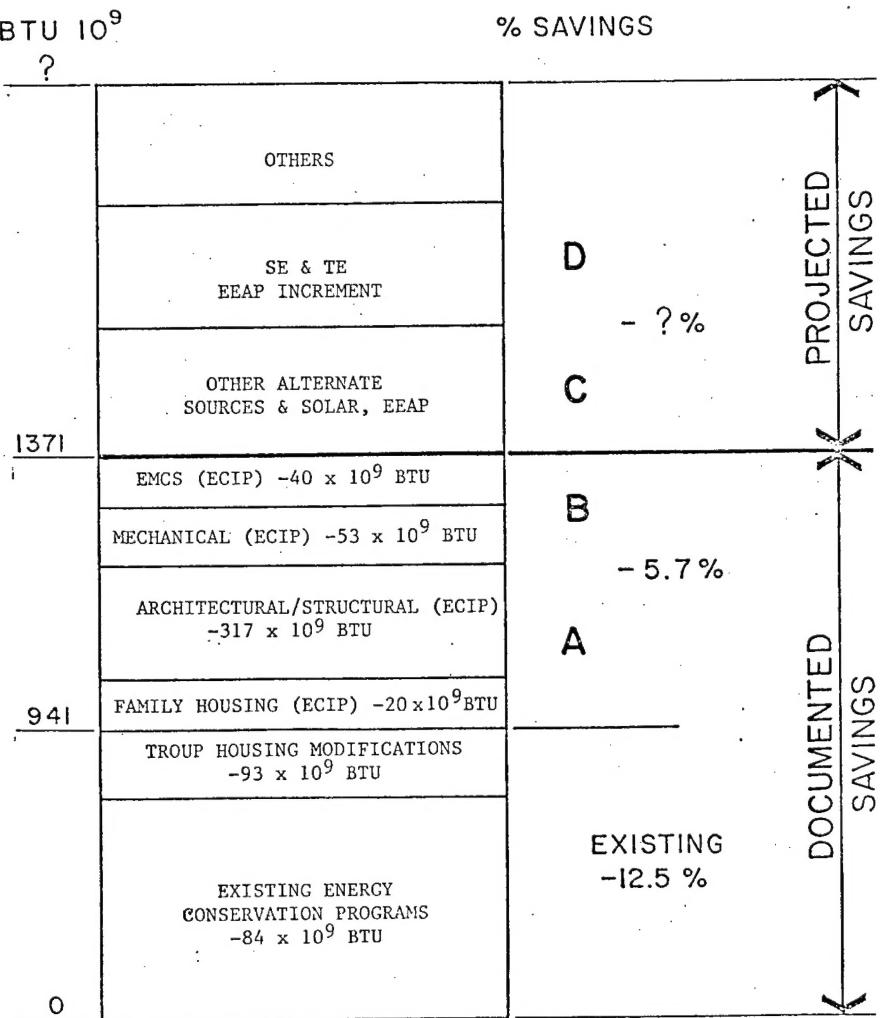


Figure 2-1-1. Total Saving Profile

As noted in Figure 2-1-1, a total of 430×10^9 British Thermal Units (BTU) could be saved annually by implementing energy conservation investments identified for Family Housing (2 installations), Architectural/Structural (18 installations), Mechanical (6 installations), and EMCS (1 installation). These energy savings represent a reduction of 2,600,000 gallons of fuel oil and 9,000,000 Kilowatthours (Kwh) of electricity which would not be required or purchased by the 8th Army.

2.1.2 Programmed ECIP Construction

The total cost of all projects at the times of construction will be \$20.1 million.

Dollar costs of projects by FY are as follows (see also figure 2-2):

	Architectural/Structural	Mechanical	EMCS
FY 1982	\$ 663,000	\$ -0-	\$ -0-
FY 1983	8,662,000	175,000	-0-
FY 1984	<u>7,062,000</u>	<u>1,875,000</u>	<u>1,691,000</u>
	\$16,387,000	\$2,050,000	\$1,691,000

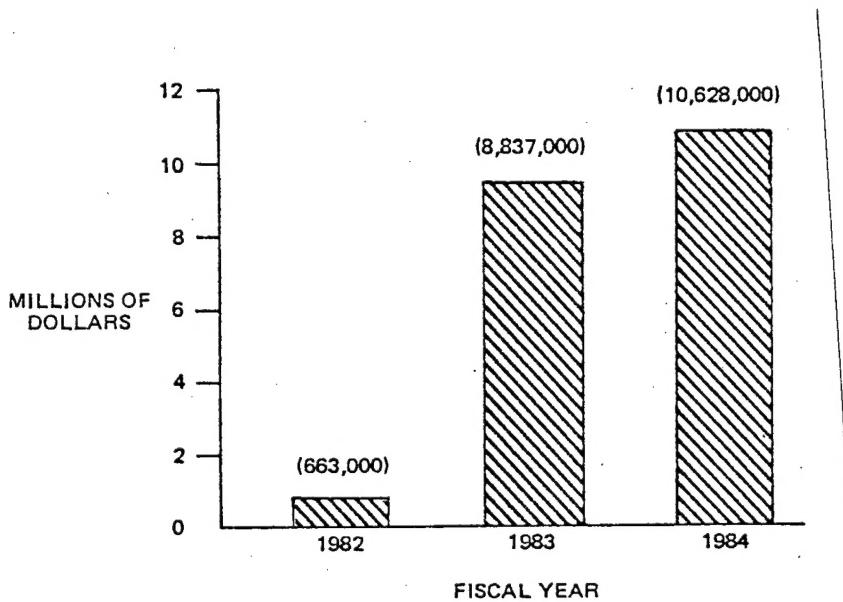


Figure 2-2. Project Submittals by Fiscal Year

2.2 AUDIT FINDINGS

2.2.1 Energy Savings Program in Progress

The Eighth Army has already implemented a spartan regimen of fuel oil allocations and turnoff and setback regulations, with impressive results (see figure 2-3).

The Troop Housing Upgrade Program, being pursued as an Eighth Army O&M project, includes many modifications that will contribute substantially to energy conservation. Annual savings of approximately 2 million kWh of electricity and 500,000 gallons of fuel oil can be expected.

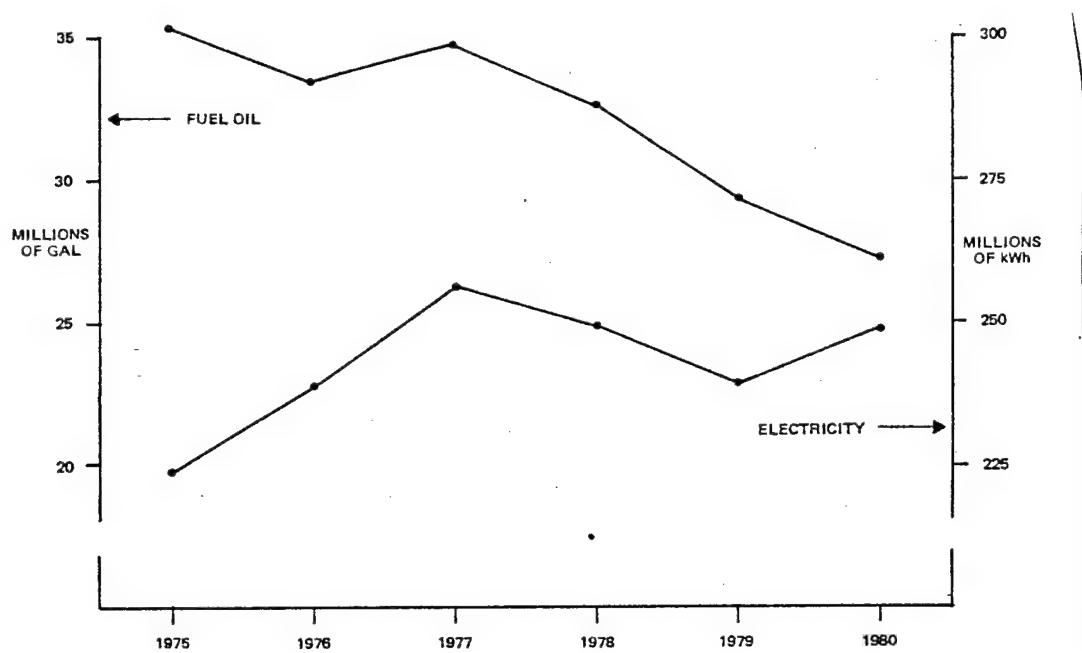


Figure 2-3. EUSA Energy Consumption

2.2.2 End-Use Analysis

Energy consumption by the entire EUSA can be broken down as follows: (All figures in thousands of MBtu.)

	<u>Fuel Oil</u>	<u>Electricity</u>
Space Heat	1,842	125
Space Cool	95	238
Domestic Hot Water	859	61
Lighting	-	1,055
Other, 19 bases	560	621
Other Installations	<u>666</u>	<u>666</u>
 TOTAL	 4,022	 2,760

The major uses of fuel oil are seen to be space heating (over 50 percent) and domestic hot water (DHW) (25 percent). Fifty percent of consumed electricity is used for lighting.

Figure 2-4 is a graphic representation of the end-use analysis.

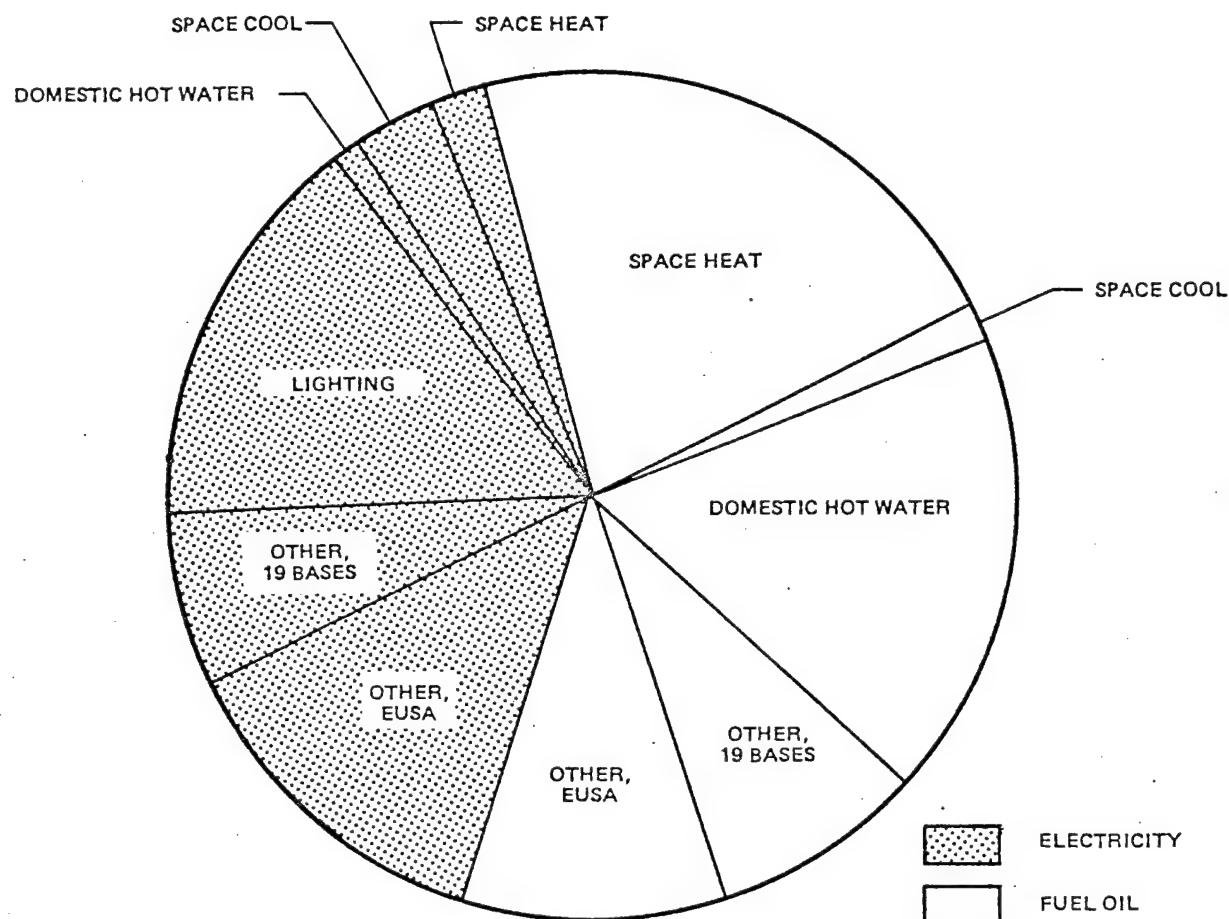


Figure 2-4. End-Use Analysis

In terms of gallons of fuel oil and kilowatthours of electricity, the same breakdown is as follows: (all figures in millions)

	<u>Fuel Oil</u>	<u>Electricity</u>
Space Heat	13.28	10.78
Space Cool	0.68	20.52
Domestic Hot Water	6.19	5.26
Lighting	-	90.95
Other, 19 bases	4.04	53.54
Other Installations	<u>4.81</u>	<u>57.45</u>
 TOTAL	29.00	238.50

3.0 PROCEDURE

Performance of the contract fell into three phases - data gathering, analysis, and reporting.

3.1 DATA GATHERING/AUDIT PHASE

During the first phase, December 1979 to August 1980, the contractors spent in excess of 1,000 man-days in Korea examining drawings, recording energy consumption, and end-use data, performing detailed audits of individual buildings, and surveying individual items of equipment such as boilers, space heaters, and air-conditioners. The contractors also met with local suppliers to establish costs for in-country procurement. Information and support from the Facility Engineer Activity, Korea (FEAK) and from the Far East District was most helpful.

3.2 ANALYSIS PHASE

This phase was initiated as data became available from the first phase and continued through computer programming, design, and iteration of options. It consisted of reducing the data, calculating current energy consumption, postulating modifications to reduce consumption, computing energy savings to be realized, and estimating costs.

3.2.1 Preselection and Predesign of Modifications

From previous experience, potential modifications were approached in the following priorities:

- a. Turnoff and setback are properly the first priority because of the potentially large savings that can result from small investments. Turnoff and setback can be mechanized with timeclocks or operated through an Energy Monitor and Control System (EMCS). Timeclocks are more cost-effective in a situation with scattered and relatively few control points; EMCS is preferred for more numerous and denser applications.
- b. Ventilation, infiltration, and transmission are major causes of direct heat loss. Ventilation refers to intentional exhaust or intake of outside air, via fans, to provide essential fresh air in the building. Infiltration is the introduction of unconditioned air through cracks around doors and windows or through other apertures in the building envelope.

Insulating the walls and ceilings and installing double pane or storm windows will cut the rate at which heat is transferred through the building envelope. Cutting this rate by a third or a quarter is, in most cases, entirely practicable and this will be directly reflected in decreased fuel oil consumption.

- c. The general term equipment efficiencies covers a wide range of investigations and modifications. All boilers over 75 hp and all air-conditioning units over 30 tons on the 19 bases were analyzed for possible improvements. Projects such as feedwater preheat, waste heat recovery, combustion air preheat, and oxygen trim were examined and, where justifiable, recommended. The large, oil-energized, absorption chiller of Yongsan Hospital also was analyzed in depth. Package air-conditioners, which constitute the majority of such units of Korea, seldom offer significant savings opportunities. Information on liquid pumps in water and sewage systems was collected for each base. Very substantial improvements in lighting efficiency (lumens per watt) have become available in the past few years and advantage was taken of opportunities to replace incandescent fixtures with fluorescent, vapor, or halide types.

3.2.2 Calculating Savings, Costs, and Ratios

Proprietary computer programs were used for heating and cooling load, energy conservation, and cost-effectiveness calculations. Manual calculations were performed to check computer results and to solve special problems. Selected modifications were then reviewed in detail for compliance with ECIP criteria and FEAK/POD guidelines, documented, and prepared as Forms 1391 and PDB's.

3.3 PROGRAMMING AND REPORTS

3.3.1 Project Definition

Much of the programming effort was devoted to aggregating conservation measures for individual buildings and equipment into total packages for the installation.

The model building approach was used, which selects a number of typical buildings, each of which represents a group of similar buildings in construction, mission, size, and configuration. The representative building is audited in detail and the results extrapolated to the group on the basis of conditioned floor area. (Unique buildings were audited individually.) The following table shows the extent of audit coverage (floor areas are in 1,000's of square feet).

	Base Total		EEAP		Percentages	
	Bldgs.	Area	Bldgs.	Area	Bldgs.	Area
Yongsan Garrison	1364	4530	852	3698	62	82
Camp Humphreys	689	1994	425	1902	62	95
Camp Walker	212	773	132	639	62	83
Camp Henry	266	547	107	415	40	76
Camp Carroll	186	1424	110	1207	59	85
K-16 Airfield	33	135	26	127	79	94
Camp Casey/H-220	1226	2416	753	1799	61	74
Camp Hovey	451	672	289	492	64	73
Hialeah	260	547	175	431	67	79
Camp Red Cloud	316	671	193	593	61	88
Camp Stanley	275	659	162	590	59	90
Camp Howze	245	398	134	304	55	76
Camp Pelham	186	308	95	218	51	71
Camp Edwards	58	210	39	184	67	88
KH/SS/JSA MAC HQ	109	136	61	112	56	82
Camp Long	130	207	93	181	72	92
Total	6046	15601	3646	12892	60	83

3.3.2 Programming

For administrative and management convenience, documentation was "packaged" according to facility class/category code.

Preparation of 1391's and PDB's was programmed to conform with the following MCA program year submissions:

- a. FY 1982. Yongsan and Walker Family Housing (At the client's request, these submissions were accelerated to the earlier fiscal year.)
- b. FY 1983. Architectural/Structural and Central Heating (Mechanical) projects for the six bases in the original contract
- c. FY 1984. All other mechanical projects and all architectural/structural projects for the 13 bases in the contract revision. (No projects for JSA/MAC HQ met the criteria for the ECIP.)

3.3.3 Reports

This effort culminated in the recommendation of 45 projects. Forms 1391, "Military Construction Project Data," related PDB's, and 10 volumes of descriptive reports providing guidance to Area Facility Engineers (AFE's) and designers have been submitted.

4.0 MAJOR FINDINGS AND RESULTS

4.1 DESCRIPTION OF MAJOR ECIP MODIFICATIONS

4.1.1 EMCS

The EMCS recommended for Yongsan Garrison will control heating and cooling systems in 37 buildings and the boilers in the two central steam heating plants. 671 data points will be monitored.

The primary purpose of an EMCS is to control needed energy use and to eliminate unnecessary use. Secondly, an EMCS provides real time visibility of status and condition and furnishes hard copies of data for the record. It also provides a basis for planning, scheduling, and maintenance activities.

Figure 4-1 is a schematic presentation of the distributive hierarchy of Field Interface Devices (FID's), Multiplexers (MUX), and Central Control Unit (CCU) and lists the individual buildings in the system.

4.1.2 Clock Thermostats with Outside Air Override

Setting thermostatic controls back from 68°F to 58°F during periods of non-occupancy will save approximately 30 percent of the heating energy. Another step that can be accomplished with the timeclock installation is an override heating cutoff based on outside air temperature.

The project recommended here is a timer (figure 4-2) to be installed on warm-air furnaces. The installation should be secure, preferably in the utility room. An outside air temperature sensing thermostat overrides other controls to shut off all heating at outside air temperatures above some selected maximum. Individual temperatures for responses can be preset at any desired points and times.

4.1.3 Insulation, Weather Stripping, and Caulking

Fiberglass batts are most effective for ceiling insulation and can also be used in walls. Four inches of fiberglass batt insulation has an R value of 13.

Expanded polystyrene foam (and related chemical compounds) in the form of rigid boards or panels is also an excellent insulator. It does not sag or tear, has an R value of about 4 per inch, and is long-lived and easy to install, though

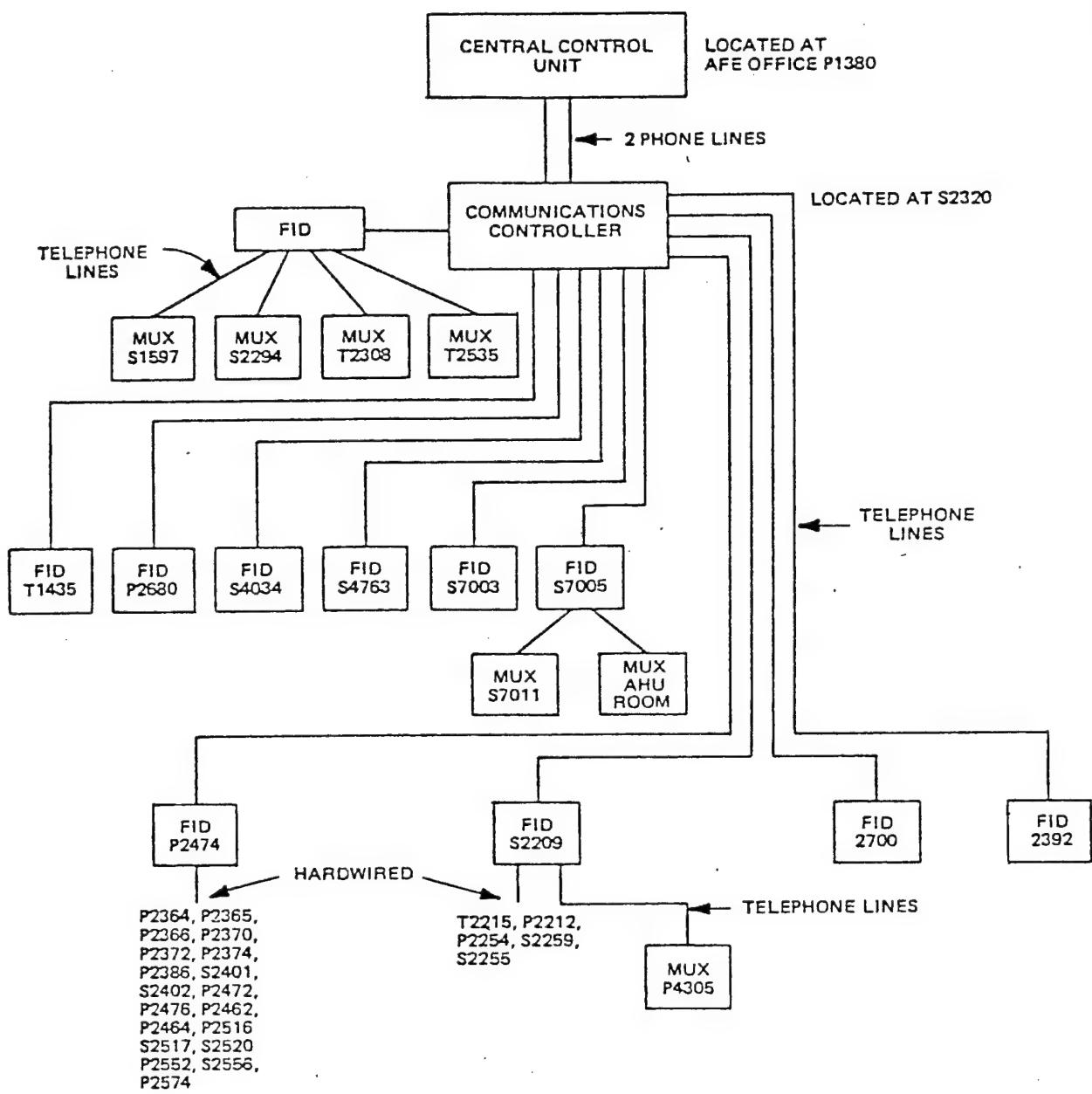


Figure 4-1. EMCS Hardware Layout.

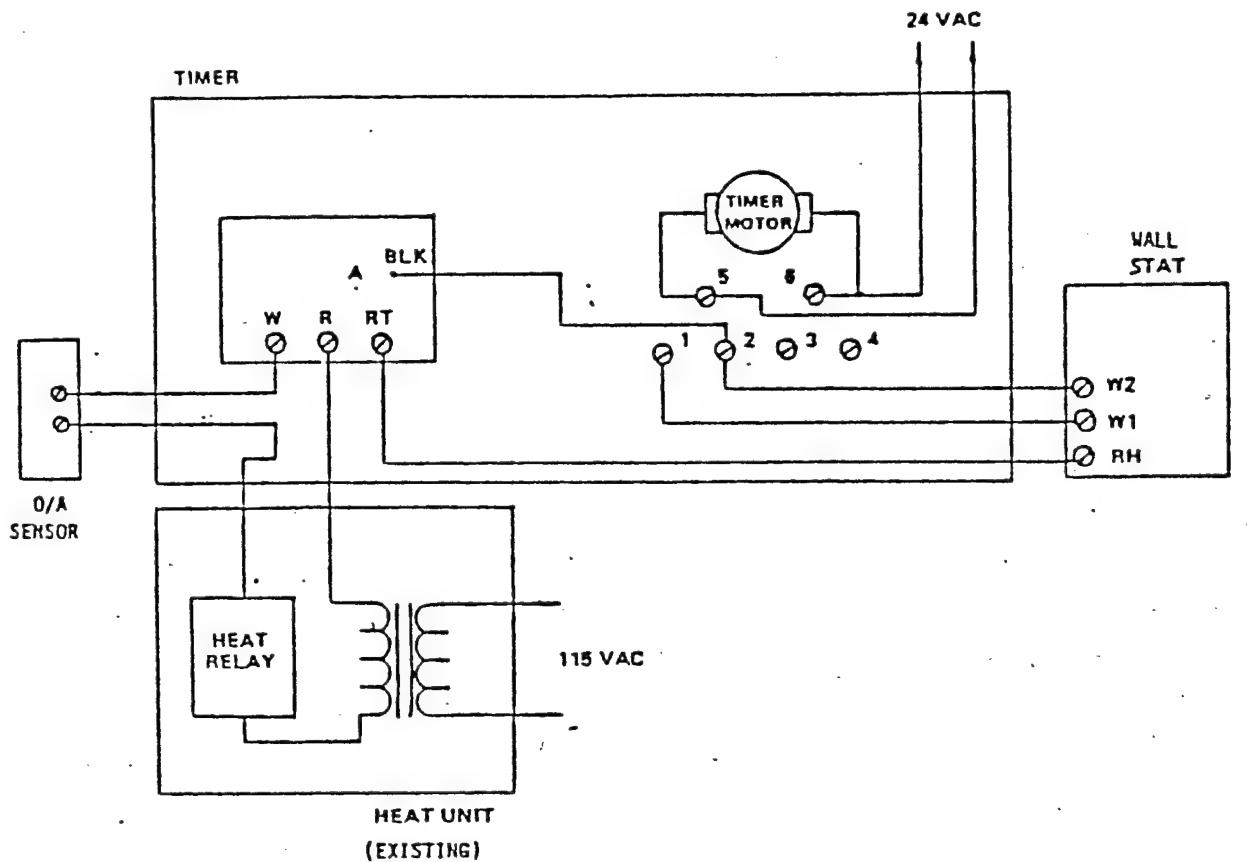


Figure 4-2. Clock Thermostat Diagram

more expensive than fiberglass. Projects in this analysis have recommended 2-inch panels applied to the outside of concrete masonry unit (CMU) walls. This practice avoids the loss of interior floor space, the expense of working around and replacing internal fixtures, and the disruption of indoor activities. A variety of finish textures, colors, and materials is available.

Outdoor air infiltrates a building through cracks and openings around windows and doors and through other apertures. Sealing these openings by installing weather stripping and caulking along the cracks is both effective and economical. Extruded metal door weather stripping is to be applied to all four edges of the door or jamb, depending upon configuration, on all exterior doors that open to a conditioned space. Window weather stripping is to be applied so that the entire crack length is sealed when the window is closed properly.

Sealing service apertures and caulking around all door and window frames is to be specified in the modification contracts. Caulking exterior wall penetrations, along floor slabs, and on external metal sheeting is particularly important in Quonset huts, to keep water out of the insulation.

4.1.4 Window Treatment

Storm windows or double pane windows will reduce energy consumption in a building. Curtains or drapes will provide even further reduction in energy use. Storm windows reduce heat losses through conduction and infiltration. Because of lower cost, they are recommended where the existing single pane window and frame are in good condition. Storm windows are available in standard two- or three-track configuration with operable sashes. Double pane windows provide 40- to 60-percent reduction of heat loss and a slight reduction of solar heat gain as well. They are single hung aluminum frame and include screens. This type fenestration is applied where existing window frames are in poor condition and subject to replacement.

4.1.5 Lighting

Commercial developments in this area over the past several years offer a wide variety of energy conservation options. Essentially, this is accomplished by substituting lower wattage lamps of higher efficiency while maintaining or improving lumen value and footcandles.

The substitutions can be one of the following, depending on total wattage: (1) incandescent replaced by high-pressure sodium or by high-efficiency fluorescent; (2) fluorescent replaced by either mercury vapor or by high-pressure sodium; and (3) mercury vapor replaced by high-pressure sodium.

4.1.6 Boiler Improvement

Oil burners typically require a greater percentage of air as the firing rate decreases to compensate for less effective mixing as airflow and velocity to the burner decreases. Energy savings can be achieved if the air/fuel ratio is modulated and maintained at the optimum ratio in response to an excess oxygen sensor. This control system will also modulate to correct for other variables that affect the combustion process, such as fuel temperature, fuel viscosity, combustion air temperature, and humidity. Major system components to be retrofitted are a sensor head, oxygen analyser/controller, modulating motor linkage,

and control panel with high-low fire set point adjustment. The O₂ trim retrofit is included in the EMCS package.

4.1.7 Project Data

Additional information on modifications and the specific recommendations made for each EUSA installation are given in the Forms 1391. Face sheets of these forms are included as appendix A to this volume for convenient reference.

4.2 MAINTENANCE AND REPAIR/MINOR CONSTRUCTION

The following items were recommended to FEAK during the course of this program. FY 1981 costs and FY 1982 savings are assumed.

	<u>E/C</u>	<u>Annual Savings</u> MBtu	<u>CWE</u> \$	<u>\$1000</u>
Buildings S2700 and S2392, Yongsan Garrison				
Replace 6,800 linear feet of underground steam supply and condensate return lines associated with building S2700, and 3,537 linear feet of lines associated with building S2392. Existing insulation has deteriorated so as to be virtually ineffective.	21.0	15,867	130,347	756.6
Building 666, Camp Carroll				
Replace 300 linear feet of uninsulated steam supply and condensate return lines with insulated lines.	15.5	339.9	4,939	22.0
Buildings S170 through S174, Camp Howze				
Replace deteriorated roof surfaces and water-soaked insulation.	23.5	1,127.4	16,383	47.4
Building S0114, Camp Edwards				
Replace nine deteriorated and warped doors.	14.5	227.4	3,305	15.7
Supply Point 48, Pusan				
Replace the 52 temporary refrigeration units. Insulation is deteriorated and water-soaked to the point of ineffectiveness.	37.2	4,974.0	55,609	133.7

4.3 UTILITIES AND DISTRIBUTION SYSTEMS

4.3.1 Electrical

There are substantial energy losses in the existing electrical distribution system contributed by direct and indirect causes. However, due to the high costs of material, equipment, and labor associated with electrical distribution work, no projects could be identified within ECIP criteria. The following maintenance activities for conservation are recommended.

4.3.1.1 Transformers

- Deenergize transformers supply unused facilities.
- Balance loading phases on secondary transformers.
- Deenergize refrigeration and heating transformers during their off seasons.
- Ventilate transformer vaults and shade outdoor transformer banks.
- Utilize efficient dry-type transformers.

4.3.1.2 Power Factor Correction

Low power factor occurs in lightly loaded motors and its correction will contribute greatly to the energy economy of distribution systems.

Low power factor increases losses in electrical distribution and utilization equipment (such as wiring, motors, and transformers) and reduces the load handling capability and voltage regulation of the electrical system.

As indicated by survey, or as identified at known inductive load centers, install capacitors to correct power factors. Inductive loads associated with electric motors can readily be corrected to better than 90-percent power factor. Capacitors should be installed on individual motors 3 hp and larger in size.

4.3.1.3 Motor/Load Matching

Original motor load calculation estimates are usually conservative and, as loads are reduced through conservation measures, the mismatch becomes even greater. If the ratio of the motor's load to the motor's horsepower rating is small, the motor will operate inefficiently. Correcting the power factor will still leave a substantial inefficiency due to size mismatch. Motors that are not loaded to at least 60 percent of their potential should be replaced whenever practical and certainly at any time a change-out is called for. A control system should be

established in supply channels to verify actual loads before replacing electric motors on a size-for-size basis.

4.3.2 Water and Sewage Systems

Energy consumption in water and sewage systems is primarily by liquid pumps. Such pumps are inherently quite efficient, given proper system design and pump sizing. The survey revealed that all such pumps were operable, with no reported leaks or seal damage, even though virtually all had exceeded their design lifetimes. Replacement is recommended but cannot be justified as an energy conservation measure.

4.4 PROJECTS INVESTIGATED BUT NOT RECOMMENDED

4.4.1 Conversion to Fuel Oil Heating in Relocatable Barracks

Electric resistance space heating was provided in the one-story H-type and the two-story relocatable barracks in Korea at the time of construction. The question of converting from electric energy to fuel oil energy (using either warm air or hot water as the medium) was examined in this analysis. The study shows that a warm-air furnace would have been a better economic choice originally and that conversion now from electricity to warm-air would be only marginally advantageous. Conversion in 1983 in a two-story relocatable barracks would save 795 MBtu of source energy annually but the cost would be approximately \$75,000, for an E/C ratio of 10.6.

4.4.2 Waste Heat Recovery - 500-Man Mess Halls

An analysis of the potential for waste heat recovery from 500-man mess hall dishwashers was carried out. The waste heat available from the smaller units amounts to 110 MBtu per year or 826 gallons of fuel oil. The construction cost is \$7,800 and the E/C ratio is 14.0. (Waste heat recovery in 1,000-man mess halls is cost-effective.)

4.4.3 Waste Heat Recovery - Diesel Generators

Building S2323 at Yongsan Garrison houses two 300 kW generators that supply uninterrupted and carefully regulated power to the communication complex in adjacent buildings, producing 190 kW of power. Efficiency is approximately 30 percent, meaning that 2.2×10^6 Btu/hr is consumed in the form of fuel oil to produce 648,470 Btu/hr in the form of electricity.

Assuming that 90 percent of the water jacket and exhaust gas energy could be recovered and that it could be distributed with 10-percent losses, 833,000 Btu/hr would be available for other uses. If this could replace fuel oil burned elsewhere at 85-percent efficiency, 8.6×10^9 Btu (equals 62,000 gallons or \$244,000 at 1985 prices) could be saved annually.

In order to take advantage of this very attractive conservation opportunity there must, of course, be a potential consumer within the limits of an economical distribution system. Because of the high values involved, extensive analyses were conducted in the attempt to define a cost-effective system. This attempt was unsuccessful and the project cannot be recommended.

4.4.4 Chilled Water Storage

Chilled water can be generated during off-peak hours and stored for use during periods of high demand. The presence of a storage tank does not reduce operating loads nor does it reduce the total energy consumption of the system. (In fact, there will be a slight increase in energy use because of pumping and heat gain in the tank.) The merit of chilled water storage lies in the ability to generate refrigeration without incurring or contributing to high demand charges. This is not an economic factor in Korea since the Eighth Army does not pay a demand fee.

4.4.5 Hot Water Storage

Considerations obtaining for hot water storage are similar to those for chilled water storage - storage allows a given demand to be met with a lower capacity generator. The same limitations also apply, the storage tank costs more than the saving from a smaller boiler.

4.4.6 Central Steam/Hot Water Boilers

Applications of feedwater economizers, combustion air preheaters, and blowdown heat recovery to 19 boilers at five central boiler installations at Yongsan were examined and found not to produce savings commensurate with their costs. As a general rule, such devices are cost-effective only on boilers of capacity greater than 500 hp. Table 4-1 summarizes the analysis.

Table 4-1. Boiler Improvements, Yongsan Garrison

Options	Annual Savings			Cost \$	Pay-Back Years	E/C
	Mega-Btu	Gal-Oil	\$			
<u>Feedwater Economizers</u>	4,870	35,030	110,344	1,137,800	10.3	4.3
<u>Combustion Air Heaters</u>	8,186	58,909	185,563	2,047,716	11.0	4.0
<u>Blowdown Heat Recovery</u>	1,366	9,829	30,961	148,421	4.8	9.2

4.5 SOLAR APPLICATIONS

The total solar energy that might be received on an area of 1 ft^2 , facing due south and tilted 47° above the local horizontal, at 37° north latitude would be approximately 508,000 Btu per year (figure 4-3). This energy can be used effectively to preheat water for either domestic or space heating use.

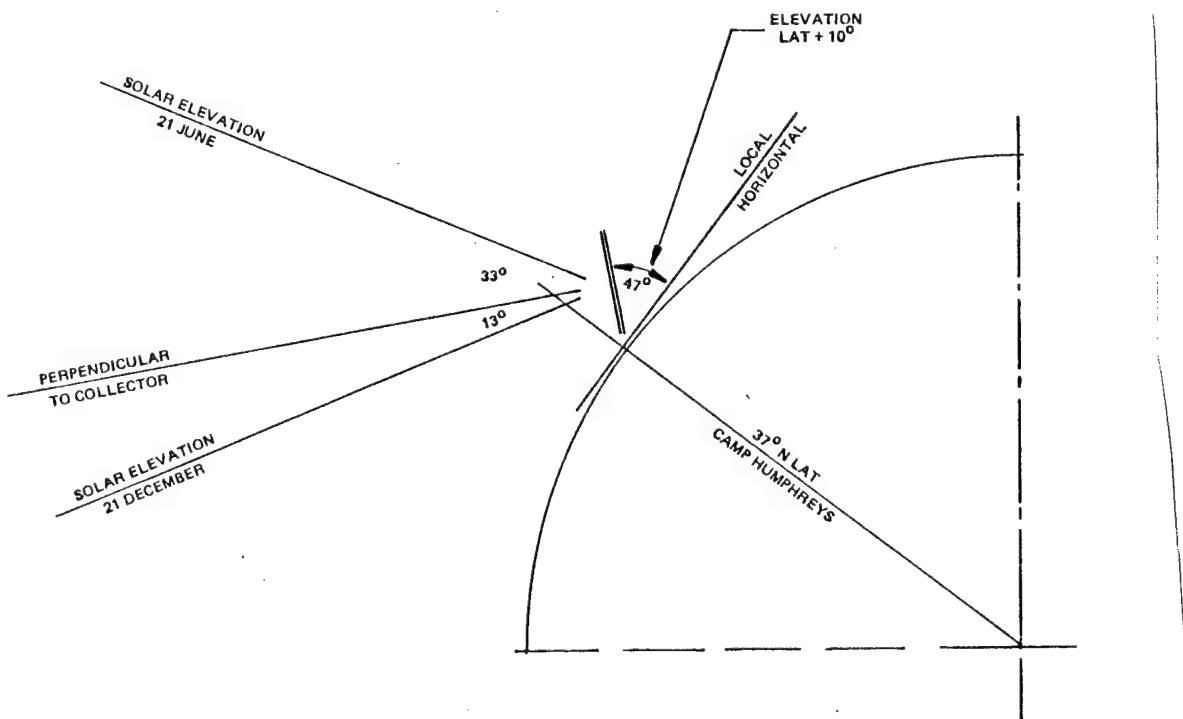


Figure 4-3. Solar Collector Geometry

To illustrate the energy and economic aspects of solar heat collectors in Korea, postulate a 1000 ft² collector adjacent to building S0758, an EM Barracks, at Camp Humphreys. A 25-year expected life will allow full amortization of the investment and the building already has a hot water space heating installation. Given minor additional plumbing to allow the application of solar energy for either space or domestic hot water heating, the full output of the collector could be used year round. The project is to be funded in the FY 1983 budget and will be operational in January 1984. Solar energy will replace fuel oil, whose price in that year is estimated to be \$3.15 per gallon.

4.5.1 Savings

The University of Wisconsin FCHART program gives the following monthly maximum collection values for the configuration described above.

Month	Btu	Month	Btu
	ft ² mo		ft ² mo
January	32,800	July	46,500
February	35,200	August	46,800
March	45,300	September	44,400
April	48,000	October	43,600
May	48,800	November	38,100
June	47,100	December	31,700

The total for the year is 508,300 Btu/ft² or 508.3 MBtu for the 1000 ft² array. This must be reduced for a sky clearness factor (say 75 percent) and for collector efficiency (40 percent is a liberal value, using manufacturers' data).

$$508.3 \frac{\text{MBtu}}{\text{year}} \times 0.75 \times 0.40 = 152.49 \frac{\text{MBtu}}{\text{year}}$$

This available energy would replace fuel oil, which now heats water at 65 percent efficiency.

$$\frac{159.49}{0.1387 \times 0.65} = 1691.4 \text{ gal saved per year}$$

$$1691.4 \text{ gal/yr} \times 3.15 \text{ \$/gal} = \$5328 \text{ saved in the first year}$$

4.5.2 Costs

Solar collectors, insulated storage tanks, and piping are available in Korea. The following prices are estimated:

<u>Item</u>	<u>Material</u>	<u>Labor</u>
Collector (1000 ft ²)	17,000	5,700
Insulated tank (1200 gal)	2,500	500
Piping (600 LF)	<u>3,000</u>	<u>2,000</u>
Total		30,700

The several markups bring this total to \$43,700.

The monitoring and control devices required by ETL 1110-3-302, 14 March 1979, should be procured in the United States and are expected to have an installed cost of \$9,600.

These two figures, escalated to 1984, give a current working estimate of \$81,000 for the project.

Costs for maintenance, operations, and repairs are not included.

4.5.3 Evaluation

The E/C ratio for this project is 152.49 MBtu divided by \$81,000 or 1.88. The simple payback period is 15 years and the B/C ratio is 1.64.

In accordance with ETL 1110-3-302, the 25-year cost savings, exclusive of any maintenance and replacement costs, is greater than the original investment and the project is cost-effective.

The project does not, however, meet the criteria for ECIP funding and a Form 1391 is not being submitted.

The payback formula is:

$$\begin{aligned}
 p &= \frac{\ln [1 + \frac{c}{s} (\frac{r}{1+r})]}{\ln (1+r)} \\
 &= \frac{\ln [1 + \frac{81,000}{5328} (\frac{0.10}{1+0.10})]}{\ln(1+0.10)} \\
 &= 9.1
 \end{aligned}$$

The investment cost is recovered in less than the expected life of 25 years.

A P P E N D I X A

Executive Summary

Final Report

DD Form 1391

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1982	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION YONGSAN GARRISON- FH - KS 948	
5. PROPOSED AUTHORIZATION \$ 616,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 711	8. PROGRAM ELEMENT NUMBER KOREA	9. STATE/COUNTRY KOREA			
10. PROPOSED APPROPRIATION \$ 616,000	11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER Modifications	13. PROJECT TITLE Architecture & Structural Modifications	NM	CM	RM	X
SECTION A - DESCRIPTION OF PROJECT							
14. 16. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY	SECTION B - COST ESTIMATES						
1. NO. OF BLDGS/100 SEE ATTACHED LIST		1. d. WIDTH	2. PRIMARY FACILITY	3. UNIT	4. QUANTITY	5. UNIT COST	6. COST (\$/1000)
a. PERMANENT	NA	a. WALL INSULATION, BOARDS, R=8	SF	(159096	2.516	\$ 616	
b. SEMI-PERMANENT	X	b. CEILING INSULATION, BATTIS, R=19	SF	(1336	2.516	(400	
c. TEMPORARY		c. DOOR WEATHER STRIPPING	LF	(1491	1.017	(1	
15. 19. DESCRIPTION OF WORK TO BE DONE		d. WINDOW TREATMENT, DOUBLE PANE	SF	(17030	2.357	(4	
Work will consist of the following modifications:							
a. NEW FACILITY		1. Wall insulation, Boards, R8 in 57 dwelling units.					
b. ADDITION		2. Ceiling insulation, battis, R19 in 1 dwelling unit.					
c. ALTERATION	X	3. Weather stripping for doors in 65 dwelling units.					
d. CONVERSION		4. Double pane windows in 56 dwelling units.					
e. OTHER (Specify)							
16. REPLACEMENT							
17. TYPE OF DESIGN							
a. STANDARD DESIGN	X						
b. SPECIAL DESIGN							
c. DRAWING NO.							
23. QUANTITATIVE DATA (UM NA)	SECTION C - BASIS OF REQUIREMENT						
25. REQUIREMENT FOR PROJECT							
This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 19.2 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 8.3. Total annual energy savings is estimated at 11,810.6 mega BTU. A total dollar savings of \$213,185 per year will result in a simple payback period of 2.9 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.							
a. TOTAL REQUIREMENT							
b. EXISTING SUBSTANDARD							
c. EXISTING ADEQUATE							
d. FUNDED NOT IN INVENTORY							
e. INADEQUATE ASSETS (e + d)							
f. UNFUNDED PRIOR AUTHORIZATION	AUTHORIZED	FUNDED					
g. INCLUDED IN FY PROGRAM							
h. DEFICIENCY (e - b - f - g)							
24. RELATED PROJECTS	NA						

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION YONGSAN GARRISON - KS 948
5. PROPOSED AUTHORIZATION \$ 1,478,000		6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 442, 131,211,610, 141,214,217,441	8. PROGRAM ELEMENT NUMBER 12. PROJECT NUMBER 6100	9. STATE/COUNTRY KOREA	10. PROPOSED APPROPRIATION \$ 1,478,000
11. BUDGET ACCOUNT NUMBER						
13. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS						
SECTION B - COST ESTIMATES						
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY						
15. DESCRIPTION OF WORK TO BE DONE						
16. Work will consist of the following modifications: 1. Wall insulation, boards, R8 in 83 buildings. 2. Ceiling insulation, batts, R19 in 39 buildings. 3. Weather stripping for doors in 80 buildings. 4. Weather stripping for windows in 15 buildings. 5. Double pane windows in 4 buildings. 6. Storm windows in 76 buildings. 7. Lighting modification, incandescent to flr. in 57 buildings. 8. Lighting modification, incandescent to HPS in 5 buildings.						
17. SUPPORTING FACILITIES						
18. QUANTITATIVE DATA (U/M) NA						
19. REQUIREMENT FOR PROJECT						
20. PRIMARY FACILITY						
21. SUPPORTING FACILITIES						
22. TOTAL PROJECT COST \$ 1478.3						
SECTION C - BASIS OF REQUIREMENT						
23. REQUIREMENT FOR PROJECT						
This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 24.2 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 12.1. Total annual energy savings is estimated at 35,722.8 mega BTU. A total dollar savings of \$719,823 per year will result in a simple payback period of 1.9 years. If this project is not effected, energy will continue to be needlessly wasted contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL 91-190 is not required.						
24. RELATED PROJECTS NA						

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80.	2. FISCAL YEAR 1983	3. DEPARTMENT ARMY			4. INSTALLATION YONGSAN GARRISON - KS 948
5. PROPOSED AUTHORIZATION \$ 831,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 211, 610, 141, T71, 214, 218, 310, 219	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY KOREA	
10. PROPOSED APPROPRIATION \$ 831,000	11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 12	13. PROJECT TITLE ARCHITECTURAL & EQUIPMENT MODIFICATIONS	NM	CM
SECTION A - DESCRIPTION OF PROJECT					
14. TYPE OF CONSTRUCTION a. PERMANENT b. SEMI-PERMANENT c. TEMPORARY	15. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY b. NO. OF BLDGS. 138 c. DESIGN CAPACITY NA d. COOLING NA	16. SEE ATTACHED LIST NA	17. d. WIDTH NA	18. e. gross AREA NA	19. f. COST NA
19. DESCRIPTION OF WORK TO BE DONE a. NEW FACILITY b. ADDITION c. ALTERATION d. CONVENTION e. OTHER (Specify)	1. Wall insulation, boards, R8 in 5 buildings. 2. Wall insulation, batts, R13 in 73 buildings. 3. Ceiling insulation, batts, R19 in 19 buildings. 4. Ceiling insulation for Quonset huts, batts, R19 in 73 buildings. 5. Weather stripping for doors in 137 buildings. 6. Weather stripping for windows in 2 buildings. 7. Double pane windows in 15 buildings. 8. Storm windows in 121 buildings. 9. Lighting modifications, inc. to flr. in 33 buildings. 10. Lighting modifications, inc. to HPS in 9 buildings.	20. PRIMARY FACILITY a. WALL INSULATION, BOARDS, R8 b. WALL INSULATION, BATTIS, R13 c. CEILING INSULATION, BATTIS, R19 d. CEILING INSULATION, BATTIS, R19 e. DOOR WEATHERSTRIPPING f. WINDOW WEATHERSTRIPPING g. WINDOW TREATMENT, DOUBLE PANE h. WINDOW TREATMENT, STORM WINDOW i. LIGHTING MOD. INC. TO FLR j. LIGHTING MOD. INC. TO HPS	21. SUPPORTING FACILITIES	22. TOTAL PROJECT COST \$ 831.4	
17. TYPE OF DESIGN a. STANDARD DESIGN b. SPECIAL DESIGN c. DRAWING NO.	18. QUANTITATIVE DATA (U/M NA)	23. REQUIREMENT FOR PROJECT a. TOTAL REQUIREMENT b. EXISTING SUFFICIENT c. EXISTING INADEQUATE d. FUNDED, NOT IN INVENTORY e. INADEQUATE ASSETS (G + H) f. UNFUNDED PRIOR AUTHORIZATION g. INCLUDED IN FY PROGRAM h. DEFICIENCY (I - J - K - L)	24. RELATED PROJECTS NA	25. REQUIREMENT FOR PROJECT This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 30.0 mega BTU annual energy savings per thousand dollars cost (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 4.6. Total annual energy savings is estimated at 24903.7 mega BTU. A total dollar savings of \$552,179 per year will result in a simple payback period of 1.5 years. If this project is not effected, energy will continue to be needlessly wasted contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL 91-190 is not required.	

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION YONGSAN GARRISON - KS 948
5. PROPOSED AUTHORIZATION \$ 1,243,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 740,550,730,510	8. PROGRAM ELEMENT NUMBER Series	9. STATE/COUNTRY KOREA		
10. PROPOSED APPROPRIATION \$ 1,243,000		11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 13. PROJECT TITLE ARCHITECTURAL [REDACTED] MODIFICATIONS	NM	CM	RM X
SECTION A - DESCRIPTION OF PROJECT						
SECTION B - COST ESTIMATES						
14. TYPE OF CONSTRUCTION		15. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY			16. PRIMARY FACILITY	
a. PERMANENT X	b. SEMI-PERMANENT X	c. TEMPORARY X	a. NO. OF BLDGS. 106	SEE ATTACHED LIST NA	a. WIDTH NA	A. WALL INSULATION, BOARDS, R8 SF (179965)
b. DESIGN CAPACITY NA	c. COOLING CAP. NA	d. ANNUAL AREA NA	b. WALL INSULATION, BATTs, R13 SF (113372)	b. CEILING INSULATION, BATTs, R19 SF (89910)	c. CEILING INSULATION, BATTs, R19 SF (1.525 (173)	
17. DESCRIPTION OF WORK TO BE DONE		18. WORK WILL CONSIST OF THE FOLLOWING MODIFICATIONS:			d. CEILING INSULATION, BATTs, R19 SF (1.169 (105)	
19. NEW FACILITY		1. Wall insulation, boards, R8 in 36 buildings.	e. DOOR WEATHER STRIPPING LF			e. DOOR WEATHER STRIPPING LF (12982)
20. ADDITION		2. Wall insulation, batts, R13 in 37 buildings.	f. WINDOW WEATHER STRIPPING LF			f. WINDOW WEATHER STRIPPING LF (5278)
21. ALTERATION		3. Ceiling insulation, batts, R19 in 18 buildings.	g. WINDOW TREATMENT, DOUBLE PANE SF			g. WINDOW TREATMENT, DOUBLE PANE SF (1476)
22. CONVERSION		4. Ceiling ins. for Quonset huts, batts, R19 in 31 bldgs.	h. WINDOW TREATMENT, STORM WINDOW SF			h. WINDOW TREATMENT, STORM WINDOW SF (25312)
23. OTHER (Specify)		5. Weather stripping for doors in 100 buildings.	i. LIGHTING MOD., INC. TO FLR W			i. LIGHTING MOD., INC. TO FLR W (30,440)
24. REPLACEMENT		6. Weather stripping for windows in 29 buildings.	j. LIGHTING MOD., INC. TO HPS W			j. LIGHTING MOD., INC. TO HPS W (70317)
25. TYPE OF DESIGN		7. Double pane windows in 14 buildings.	k. LIGHTING MOD., INC. TO HPS W			k. LIGHTING MOD., INC. TO HPS W (86850)
26. STANDARD DESIGN X		8. Storm windows in 54 buildings.	l. SUPPORTING FACILITIES 0			l. SUPPORTING FACILITIES 0
27. SPECIAL DESIGN c. DRAWING NO.		9. Translucent sandwich fenestration (80%) in 1 bldg.	m. SUPPORTING FACILITIES 0			m. SUPPORTING FACILITIES 0
28. RELATED PROJECTS NA		10. Lighting modification, inc. to fir. in 21 buildings.	n. SUPPORTING FACILITIES 0			n. SUPPORTING FACILITIES 0
29. QUANTITATIVE DATA (U/M) NA		11. Lighting modification, inc. to HPS in 2 buildings.	o. SUPPORTING FACILITIES 0			o. SUPPORTING FACILITIES 0
30. REQUIREMENT FOR PROJECT		12. TOTAL PROJECT COST \$ 1243	p. SUPPORTING FACILITIES 0			p. SUPPORTING FACILITIES 0
SECTION C - BASIS OF REQUIREMENT						
31. This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 23.9 mega-BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 9.6. Total annual energy savings is estimated at 29,725.4 mega-BTU. A total dollar savings of \$628,400 per year will result in a simple payback period of 2.0 years. If this project is not effected, energy will continue to be needlessly wasted contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL 91-190 is not required.						
32. PAGE NO. 1						

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	3. MILITARY CONSTRUCTION PROJECT DATA		4. INSTALLATION K-16 AIRFIELD - KS 508
5. PROPOSED AUTHORIZATION \$ 86,000	6. PRIOR AUTHORIZATION PL.	7. CATEGORY CODE NUMBER 131, 211, 141, 218 550, 610, 730, 740, 171	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY KOREA
10. PROPOSED APPROPRIATION \$ 86,000	11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 6100	13. PROJECT TITLE ARCHITECTURAL & STRUTURAL MODIFICATIONS	NM CM RM X
SECTION A - DESCRIPTION OF PROJECT				
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY				
15. TYPE OF CONSTRUCTION				
a. PERMANENT <input checked="" type="checkbox"/>	b. SEMI-PERMANENT <input checked="" type="checkbox"/>	c. TEMPORARY <input checked="" type="checkbox"/>	d. NO. OF BLDGS. 17	SEE ATTACHED LIST NA
e. DESIGN CAPACITY NA	f. COOLING NA	g. CAP. NA	h. WIDTH NA	i. ACROSS AREA NA
16. DESCRIPTION OF WORK TO BE DONE				
Work will consist of the following modifications:				
1. Wall insulation, boards, R8 in 6 buildings.				
2. Wall insulation, batts, R13 in 7 buildings.				
3. Ceiling insulation, batts, R19 in 7 buildings.				
4. Ceiling ins. for Quonset huts, batts, R19 in 6 bldgs.				
5. Weather stripping for doors in 17 buildings.				
6. Weather stripping for windows in 3 buildings.				
7. Double pane windows in 2 buildings.				
8. Storm windows in 10 buildings.				
9. Lighting modification, inc. to flr. in 3 buildings.				
17. TYPE OF DESIGN a. STANDARD DESIGN <input checked="" type="checkbox"/>				
b. SPECIAL DESIGN c. DRAWING NO.				
18. SECTION B - COST ESTIMATES				
19. PRIMARY FACILITY	20. QUANTITY	UNIT COST	COST (\$000)	
A. WALL INSULATION, BOARDS, R8	SF (11920)	\$ 2.892	, 86	
B. WALL INSULATION, BATT, R13	SF (6126)	1.525	, 34	
C. CEILING INSULATION, BATT, R19	SF (12881)	1.169	, 9	
D. CEILING INSULATION, BATT, R19	SF (4148)	1.392	, 6	
E. DOOR WEATHER STRIPPING	LF	2.710	, 11	
F. WINDOW WEATHER STRIPPING	LF	2.351	, 1	
G. WINDOW TREATMENT, DOUBLE PANE	LF	24.255	, 4	
H. WINDOW TREATMENT, STORM WINDOWS	SF	262		
I. LIGHTING MOD., INC TO FLR	W	765	, 5	
21. SUPPORTING FACILITIES		6.779		
22. TOTAL PROJECT COST		300	, 0.920	
SECTION C - BASIS OF REQUIREMENT				
23. REQUIREMENT FOR PROJECT				
24. QUANTITATIVE DATA (NM CM RM X)				
a. TOTAL REQUIREMENT NA	b. EXISTING SUBSTANDARD NA	c. EXISTING ADEQUATE NA	d. FUNDED, NOT IN INVENTORY NA	e. INADEQUATE ASSETS (c + d) NA
f. FUNDED PRIOR AUTHORIZATION NA	g. AUTHORIZED FUNDED NA	h. INCLUDED IN FY PROGRAM NA	i. DEFICIENCY (a - e - f - g) NA	j. RELATED PROJECTS NA

This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 27.9 mega BTU annual energy savings per thousand dollars cost (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 11.3. Total annual energy savings is estimated at 2,388.7 mega BTU. A total dollar savings of \$53,630 per year will result in a simple payback period of 1.6 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP STANLEY - KS 284, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211,131,141,610,740, 171,214,218,442,540,	7. PROJECT NUMBER	8. PROJECT COST (\$000) 780	
550,730,219		9. COST ESTIMATES		
Series ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility				
Wall Insulation, Boards, R8	SF	57428	2.840	665 (163)
Wall Insulation, Batts, R13	SF	85844	1.498	(129)
Ceiling Insulation, Batts, R19	SF	61753	1.147	(71)
Ceiling Insulation, Batts, R19	SF	52980	1.368	(72)
Door Weather Stripping	LF	14714	2.661	(39)
Window Weather Stripping	LF	125	2.310	(0)
Window Treatment, Double Pane	SF	1376	13.999	(19)
Window Treatment, Storm Window	SF	8903	6.657	(59)
Window Treatment, TSF 80%	SF	34	29.882	(1)
Lighting Modification, inc. to flr.	W	11147	0.904	(10)
Lighting Modification, inc. to HPS	W	35188	0.728	(26)
Warm Air Furnace (WAF) Timer Installation	PC	88	860.511	(76)
Supporting Facilities				0
Subtotal				665
Contingency (10%)				67
Total Contract Cost				732
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Stanley are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Stanley which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP STANLEY - KS 284, KOREA		
4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	5. PROJECT NUMBER ECIP	
9. COST ESTIMATES (Continued)		
Supervision, Inspection & Overhead (6.5%)	48	
Total Request	780	
Installed Equipment - Other Appropriations	(0)	
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)		
1. Wall insulation, boards, R8 will be installed in 27 buildings.		
2. Wall insulation, batts, R13 will be installed in 51 buildings.		
3. Ceiling insulation, batts, R19 will be installed in 23 buildings.		
4. Ceiling insulation, batts, R19 will be installed in 49 buildings.		
5. Door weather stripping will be installed in 90 buildings.		
6. Window weather stripping will be installed in 2 buildings.		
7. Window treatment, double pane will be installed in 15 buildings.		
8. Window treatment, storm window will be installed in 74 buildings.		
9. Window treatment, TSF 80% will be installed in 1 building.		
10. Lighting modification, inc. to flr. will be installed in 8 buildings.		
11. Lighting modification, inc. to HPS will be installed in 9 buildings.		
12. WAF timer will be installed in 84 buildings.		
11. REQUIREMENT:		
<p><u>PROJECT:</u> The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.</p> <p><u>REQUIREMENT:</u> This project will result in 20.5 mega BTU annual energy savings per thousand dollar cost (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 7.0. Total annual energy savings is estimated at 15,963.6 mega BTU. A total dollar savings of \$420,366 per year will result in a simple payback period of 1.9 years.</p> <p><u>CURRENT SITUATION:</u> This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.</p> <p><u>IMPACT IF NOT PROVIDED:</u> If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.</p>		

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP RED CLOUD - KS 256, KOREA		4. PROJECT TITLE ARCHITECTURAL AND STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211,131,214,740, 171,218,442,550, 610,730 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 881	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	37407	2.840	752
Wall Insulation, Batts, R13	SF	112822	1.498	169
Ceiling Insulation, Batts, R19	SF	82626	1.147	95
Ceiling Insulation, Batts, R19	SF	85404	1.368	117
Door Weather Stripping	LF	11218	2.661	30
Window Weather Stripping	LF	302	2.310	1
Window Treatment, Double Pane	SF	2607	13.999	37
Window Treatment, Storm Window	SF	10709	6.657	71
Window Treatment, TSF 80%	SF	434	29.882	13
Lighting Modification, inc. to flr.	W	5778	0.904	5
Lighting Modification, inc. to HPS	W	9833	0.728	7
Warm Air Furnace (WAF) Timer Installation	PC	118	860.511	102
<u>Supporting Facilities</u>				0
Subtotal				752
Contingency (10%)				75

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at Camp Red Cloud are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at Camp Red Cloud which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.

1. Wall insulation, boards, R8, will be installed in 19 buildings.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP RED CLOUD - KS 256		
4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	5. PROJECT NUMBER ECIP	
9. COST ESTIMATES (Continued)		
Total Contract Cost	827	
Supervision, Inspection and Overhead (6.5%)	54	
Total Request	881	
Installed Equipment - Other Appropriations	(0)	
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)		
2. Wall insulation, batts, R13, will be installed in 59 buildings.		
3. Ceiling insulation, batts, R19, will be installed in 29 buildings.		
4. Ceiling insulation, batts, R19, will be installed in 55 buildings.		
5. Door weather stripping will be installed in 98 buildings.		
6. Window weather stripping will be installed in 3 buildings.		
7. Window treatment, double pane will be installed in 14 buildings.		
8. Window treatment, storm windows will be installed in 77 buildings.		
9. Window treatment, TSF 80% will be installed in 2 buildings.		
10. Lighting modification, inc. to flr. will be installed in 7 buildings.		
11. Lighting modification, inc. to HPS will be installed in 2 buildings.		
12. WAF timer installation in 107 buildings.		
11. REQUIREMENT: PROJECT: The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.		
REQUIREMENT: This project will result in 22.4 mega BTU annual energy savings per thousand dollars cost, (E/C ratio) and a benefit-to-cost ratio (B/C ratio) of 6.5. Total annual energy savings is estimated at 19,705.3 mega BTU. A total dollar savings of \$520,925 per year will result in a simple payback period of 1.7 years.		
CURRENT SITUATION: This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.		
IMPACT IF NOT PROVIDED: If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals.		
This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.		

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP CASEY - KS 124, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES).		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211,131,141,214,452 442,610,171,218 series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 1,216	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				1,038
Wall Insulation, Boards, R=8	SF	54912	2.840	(156)
Wall Insulation, Batts, R=13	SF	153302	1.498	(230)
Ceiling Insulation, Batts, R=19	SF	80280	1.147	(92)
Ceiling Insulation, Batts, R=19	SF	124757	1.368	(171)
Door Weather Stripping	LF	18827	2.661	(50)
Window Weather Stripping	LF	49	2.310	(0)
Window Treatment, Double Pane	SF	4928	13.999	(69)
Window Treatment, Storm Window	SF	10248	6.657	(68)
Window Treatment, TSF 80%	SF	424	29.882	(13)
Lighting Modification, inc. to flr. R	W	4475	0.904	(4)
Lighting Modification, inc. to HPS.	W	32396	0.728	(24)
Warm Air Furnace (WAF) Timer Installation	PC	188	360.511	(162)
<u>Supporting Facilities</u>				0
Subtotal				1,038
Contingency (10%)				104
Total Contract Cost				1,142
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Casey are to be modified to achieve improved energy conservation.				
<p>Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.</p>				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Casey which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80						
3. INSTALLATION AND LOCATION CAMP CASEY - KS 124								
4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	5. PROJECT NUMBER ECIP							
<p>9. COST ESTIMATES - (Continued)</p> <table> <tr> <td>Supervision, Inspection & Overhead (6.5%)</td> <td style="text-align: right;">74</td> </tr> <tr> <td>Total Request</td> <td style="text-align: right;"><u>1,216</u></td> </tr> <tr> <td> Installed Equipment - Other Appropriates</td> <td style="text-align: right;">(0)</td> </tr> </table>			Supervision, Inspection & Overhead (6.5%)	74	Total Request	<u>1,216</u>	Installed Equipment - Other Appropriates	(0)
Supervision, Inspection & Overhead (6.5%)	74							
Total Request	<u>1,216</u>							
Installed Equipment - Other Appropriates	(0)							
<p>10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)</p> <ol style="list-style-type: none"> 1. Wall insulation, boards, R8 will be installed in 29 buildings. 2. Wall insulation, batts, R13 will be installed in 113 buildings. 3. Ceiling insulation, batts, R19 will be installed in 31 buildings. 4. Ceiling insulation, batts, R19 will be installed in 113 buildings. 5. Door weather stripping will be installed in 153 buildings. 6. Window weather stripping will be installed in 2 buildings. 7. Window treatment, double pane will be installed in 25 buildings. 8. Window treatment, storm windows will be installed in 123 buildings. 9. Window treatment, TSF 80% will be installed in 1 building. 10. Lighting Modification, Inc. to FLR will be installed in 9 buildings. 11. Lighting Modification, Inc. to HPS will be installed in 8 buildings. 12. WAF timer installation will be installed in 167 buildings. 								
<p>11. REQUIREMENT:</p> <p><u>PROJECT:</u> The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.</p> <p><u>REQUIREMENT:</u> This project will result in 19.5 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 5.7. Total annual energy savings is estimated at 23,707.5 mega BTU. A total dollar savings of \$628,096 per year will result in a simple payback period of 1.9 years.</p> <p><u>CURRENT SITUATION:</u> This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.</p> <p><u>IMPACT IF NOT PROVIDED:</u> If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals.</p>								

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP CASEY - KS 124		4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 740,510,550,730 760,721,540 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 1195	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	141764	2.840	684
Wall Insulation, Batts, R13	SF	88835	1.498	(133)
Ceiling Insulation, Batts, R19	SF	142512	1.147	(163)
Ceiling Insulation, Batts, R19	SF	72965	1.368	(100)
Door Weather Stripping	LF	4985	2.661	(13)
Window Weather Stripping	LF	296	2.310	(1)
Window Treatment, Double Pane	SF	1448	13.999	(20)
Window Treatment, Storm Window	SF	8003	6.657	(53)
Window Treatment, TSF 80%	SF	1762	29.882	(53)
Lighting Modification, inc. to flr.	W	10400	0.904	(9)
Lighting Modification, inc. to HPS.	W	36000	0.728	(26)
Warm Air Furnaces (WAF) Timer Installation	PC	76	860.511	(65)
<u>Supporting Facilities</u>				0.
<u>Subtotal</u>				1039
Contingency (10%)				104

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at Camp Casey are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at Camp Casey which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP CASEY - KS 124		
4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	5. PROJECT NUMBER ECIP	
9. COST ESTIMATES (Continued)		
Total Contract Cost	1143	
Supervision, Inspection & Overhead (6.5%)	74	
Total Request	1195	
Installed Equipment - Other Appropriations	(0)	
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)		
1. Wall insulation, boards, R8 will be installed in 26 buildings.		
2. Wall insulation, batts, R13 will be installed in 41 buildings.		
3. Ceiling insulation, batts, R19 will be installed in 21 buildings.		
4. Ceiling insulation, batts, R19 will be installed in 33 buildings.		
5. Door weather stripping will be installed in 75 buildings.		
6. Window weather stripping will be installed in 2 buildings.		
7. Window treatment, double pane will be installed in 15 buildings.		
8. Window treatment, storm window will be installed in 57 buildings.		
9. Window treatment, TSF 80% will be installed in 4 buildings.		
10. Lighting modification, inc. to flr. will be installed in 8 buildings		
11. Lighting modification, inc. to HPS will be installed in 1 building.		
12. WAF timer will be installed in 61 buildings.		
11. REQUIREMENT:		
PROJECT: The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.		
REQUIREMENT: This project will result in 24.0 mega BTU annual energy savings per thousand dollars cost (E/C ratio), and a benefit-to-cost (B/C ratio) of 9.7. Total annual energy savings is estimated at 28,678.8 mega BTU. A total dollar savings of \$775,308 per year will result in a simple payback period of 1.5 years.		
CURRENT SITUATION: This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.		
IMPACT IF NOT PROVIDED: If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.		

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HOVEY - KS 168, KOREA		4. PROJECT TITLE ARCHITECTURE & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT Series	6. CATEGORY CODE 211,740,610,141, 171,214,218,442,550	7. PROJECT NUMBER	8. PROJECT COST (\$000) 513	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall insulation, boards, R=8	SF	9152	2.840	438
Wall insulation, batts, R=13	SF	87789	1.498	(132)
Ceiling insulation, batts, R=19	SF	8997	1.147	(10)
Ceiling insulation, batts, R=19	SF	82824	1.368	(113)
Door weather stripping	LF	6774	2.661	(18)
Window weather stripping	LF	198	2.310	(1)
Window treatment, double pane	SF	1445	13.999	(20)
Window treatment, storm window	SF	5611	6.657	(37)
Window treatment, TSF 80%	SF	38	29.882	(1)
Lighting Modification, Inc. to flr.	W	4799	0.904	(4)
Lighting Modification, Inc. to HPS	W	20768	0.728	(15)
Warm air furnace (WAF) timer installation	PC	70	860.511	(60)
<u>Supporting Facilities</u>				0
Subtotal				438
Contingency (10%)				44
Total Contract Cost				482

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at Camp Hovey are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at Camp Hovey which are to receive each modification are attached to this form. Types of construction are indicated on the buildings lists.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HOVEY - KS 168		
4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	ECIP	5. PROJECT NUMBER
9. COST ESTIMATES (Continued)		
Supervision, Inspection & Overhead (6.5%)		31
Total Request		513
Installed Equipment - Other Appropriations		(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)		
<ol style="list-style-type: none"> 1. Wall insulation, boards, R=8 will be installed in 4 buildings. 2. Wall insulation, batts, R=13 will be installed in 51 buildings. 3. Ceiling insulation, batts, R=19 will be installed in 4 buildings. 4. Ceiling insulation, batts, R=19 will be installed in 49 buildings. 5. Door weather stripping will be installed in 70 buildings. 6. Window weather stripping will be installed in 2 buildings. 7. Window treatment, double pane will be installed in 8 buildings. 8. Window treatment, storm window will be installed in 60 buildings. 9. Window treatment, TSF 80% will be installed in 1 building. 10. Lighting Modification, Inc. to flr. will be installed in 10 buildings. 11. Lighting Modification, Inc. to HPS. will be installed in 5 buildings. 12. WAF timer installation will be installed in 61 buildings. 		
11. REQUIREMENT:		
<p><u>PROJECT:</u> The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.</p> <p><u>REQUIREMENT:</u> This project will result in 17.1 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 4.0. Total annual energy savings is estimated at 8,750.5 mega BTU. A total dollar savings of \$226,246 per year will result in a simple payback period of 2.3 years.</p> <p><u>CURRENT SITUATION:</u> This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.</p>		

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION H-220 HELIPORT - KS 971, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM FURNACE)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 141,171,610,730, 740,211,550, Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 117	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards R8	SF	805	2.840	100
Wall Insulation, Batts, R13	SF	16992	1.498	(25)
Ceiling Insulation, Batts, R19	SF	19655	1.368	(27)
Door Weather Stripping	LF	2321	2.661	(6)
Window Treatment, Double Pane	SF	951	13.999	(13)
Window Treatment, Storm Window	SF	529	6.657	(4)
Warm Air Furnace (WAF) Timer Installation	PC	26	860.511	(22)
<u>Supporting Facilities</u>				0
Subtotal				100
Contingency (10%)				10
Total Contract Cost				110
Supervision, Inspection & Overhead (6.5%)				7
Total Request				117
Installed Equipment - Other Appropriations				(0)

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at H-220 Heliport are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door weather stripping in order to decrease infiltration. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at H-220 Heliport which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.

Wall insulation, boards, R8 will be installed in 1 building.

Wall insulation, batts, R13 will be installed in 14 buildings.

Ceiling insulation, batts, R19 will be installed in 14 buildings.

Door weather stripping will be installed in 16 buildings.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HOWZE - KS 176, KOREA		4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 131,141,211,740,171, 214,610,550	7. PROJECT NUMBER	8. PROJECT COST (\$000) 368	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	26836	2.840	314
Wall Insulation, Batts, R13	SF	40041	1.498	(76)
Ceiling Insulation, Batts, R19	SF	30189	1.147	(60)
Ceiling Insulation, Batts, R19	SF	26336	1.368	(35)
Door Weather Stripping	LF	3544	2.661	(36)
Window Weather Stripping	LF	365	2.310	(9)
Window Treatment, Double Pane	SF	1704	13.999	(1)
Window Treatment, Storm Window	SF	3490	6.657	(24)
Lighting Modification, inc. to flr.	W	17048	0.904	(23)
Warm Air Furnace (WAF) Timer	PC	40	860.511	(15)
<u>Supporting Facilities</u>				0
Subtotal				314
Contingency (10%)				31
Total Contract Cost				345
Supervision, Inspection & Overhead (6.5%)				23
Total Request				368
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Howze are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Howze which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation boards, R8, will be installed in 15 buildings. 2. Wall insulation batts, R13, will be installed in 27 buildings. 3. Ceiling insulation batts, R19, will be installed in 14 buildings. 				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP EDWARDS - KS 032, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211,442,740,141,214, 550, Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 321	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	11356	2.840	274
Wall Insulation, Batts, R13	SF	18140	1.498	(32)
Ceiling Insulation, Batts, R19	SF	58986	1.147	(27)
Ceiling Insulation, Batts, R19	SF	20006	1.368	(68)
Door Weather Stripping	LF	9516	2.661	(27)
Window Treatment, Double Pane	SF	327	13.999	(5)
Window Treatment, Storm Window	SF	1350	6.657	(9)
Lighting Modification, inc. to flr.	W	7550	0.904	(7)
Lighting Modification, inc. to HPS	W	89523	0.728	(65)
Warm Air Furnace (WAF) Timer Installation	PC	10	860.511	(9)
<u>Supporting Facilities</u>				0
Subtotal				274
Contingency (10%)				27
Total Contract Cost				301
Supervision, Inspection & Overhead (6.5%)				20
Total Request				321
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Edwards are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Edwards which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation, boards, R8, will be installed in 7 buildings. 2. Wall insulation, batts, R13, will be installed in 10 buildings. 3. Ceiling insulation, batts, R19, will be installed in 7 buildings. 				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP PELHAM - KS 252, KOREA		4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211, 131, 740, 141, 214, 218, 442, 550 610 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 361	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	24156	2.840	308
Wall Insulation, Batts, R13	SF	39645	1.498	59
Ceiling Insulation, Batts, R19	SF	20926	1.147	24
Ceiling Insulation, Batts, R19	SF	38138	1.368	52
Floor/Basement Insulation, Batts, R13	SF	3511	0.926	3
Door Weather Stripping	LF	4746	2.661	13
Window Weather Stripping	LF	29	2.310	0
Window Treatment, Double Pane	SF	2608	13.999	37
Window Treatment, Storm Window	SF	1915	6.657	13
Lighting Modification, inc. to flr.	W	6582	0.904	6
Lighting Modification, inc. to HPS.	W	4892	0.728	4
Warm Air Furnace (WAF) Timer Installation	PC	34	860.511	30
<u>Supporting Facilities</u>				0
Subtotal				308
Contingency (10%)				31
Total Contract Cost				339
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Pelham are to be modified to achieve improved energy conservation.				
Install wall, ceiling and floor/basement insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Pelham which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation, boards, R8, will be installed in 11 buildings. 2. Wall insulation, batts, R13, will be installed in 23 buildings. 3. Ceiling insulation, batts, R19, will be installed in 7 buildings. 				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP PELHAM - KS 252		
4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	5. PROJECT NUMBER ECIP	
9. COST ESTIMATES (Continued)		
Supervision, Inspection and Overhead (6.5%)	22	
Total Request	361	
Installed Equipment - Other Appropriations	(0)	
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued)		
4. Ceiling insulation, batts, R19, will be installed in 22 buildings.		
5. Floor/basement insulation, batts, R13, will be installed in 1 building.		
6. Door weather stripping will be installed in 38 buildings.		
7. Window weather stripping will be installed in 1 building.		
8. Window treatment, double pane, will be installed in 12 buildings.		
9. Window treatment, storm window, will be installed in 23 buildings.		
10. Lighting modification, inc. to flr. will be installed in 3 buildings.		
11. Lighting modification, inc. to HPS, will be installed in 3 buildings.		
12. WAF timer installation will be installed in 33 buildings.		
11. REQUIREMENTS:		
<u>PROJECT:</u> The addition of wall, ceiling and floor/basement insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed.		
<u>REQUIREMENT:</u> This project will result in 21.5 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 7.7. Total annual energy savings is estimated at 7,769.2 mega BTU. A total dollar savings of \$198,135 per year will result in a simple payback period of 1.8 years.		
<u>CURRENT SITUATION:</u> This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures.		
<u>IMPACT IF NOT PROVIDED:</u> If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.		

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION SWISS SWEDE CAMP - KS 994, KOREA		4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 610, 141, 740 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 19	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Batts, R=13	SF	3580	1.498	16
Ceiling Insulation, Batts, R=19	SF	1041	1.368	(5)
Door Weather Stripping	LF	249	2.661	(1)
Window Treatment, Double Pane	SF	417	13.999	(1)
Window Treatment, Storm Window	SF	140	6.657	(6)
Warm Air Furnace (WAF) Timer Installation	PC	2	860.511	(1)
<u>Supporting Facilities</u>				0
Subtotal				16
Contingency (10%)				2
Total Contract Cost				18
Supervision, Inspection & Overhead (6.5%)				1
Total Request				19
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Swiss Swede Camp are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door weather stripping in order to decrease infiltration. Install timers on warm air furnaces for a 100° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Swiss Swede Camp which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation, batts, R=13 will be installed in two buildings. 2. Ceiling insulation, batts, R=19 will be installed in one building. 				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP KITTYHAWK - KS 540, KOREA		4. PROJECT TITLE ARCHITECTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 740,141,218,442, 730,550,610, Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 97	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility				83
Wall insulation, boards, R8	SF	6546	2.840	(19)
Wall insulation, batts, R13	SF	11644	1.498	(17)
Ceiling insulation, batts, R19	SF	3833	1.147	(4)
Ceiling insulation, batts, R19	SF	12855	1.368	(18)
Door weather stripping	LF	840	2.661	(2)
Window treatment, double pane	SF	77	13.999	(1)
Window treatment, storm window	SF	1337	6.657	(9)
Lighting modification, inc. to flr.	W	73	.904	(0)
Warm Air Furnace (WAF) timer installation	PC	15	860.511	(13)
Supporting Facilities				0
Subtotal				83
Contingency (10%)				8
Total Contract Cost				91
Supervision, Inspection & Overhead (6.5%)				6
Total Request				97
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Kittyhawk are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Kittyhawk which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation, boards, R8 will be installed in 6 buildings. 2. Wall insulation, batts, R13 will be installed in 10 buildings. 3. Ceiling insulation, batts, R19 will be installed in 3 buildings. 4. Ceiling insulation, batts, R19 will be installed in 10 buildings. 				

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION CAMP HUMPHREYS - KS 792	
5. PROPOSED AUTHORIZATION \$ 1,502,000		6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 214; 215; 216; 217; 218; 219	8. PROGRAM ELEMENT NUMBER 214; 215; 216; 217; 218; 219	9. STATE/COUNTRY KOREA		
10. PROPOSED APPROPRIATION \$ 1,502,000		11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 6100	13. PROJECT TITLE ARCHITECTURAL & STAFF MODIFICATIONS	NM	CM	
SECTION B - COST ESTIMATES							
14. TYPE OF CONSTRUCTION		15. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY					
a. PERMANENT		1. NO. OF BLDGS. 188	2. SEE ATTACHED LIST	3. d. WIDTH NA	4. e. GROSS AREA NA	5. f. CAP. NA	
b. SEMI-PERMANENT		6. DESIGN CAPACITY NA	7. g. COOLING NA	8. h. COST	9. i. NA	10. j. NA	
c. TEMPORARY		11. k. DESCRIPTION OF WORK TO BE DONE	12. l. WORK WILL CONSIST OF THE FOLLOWING MODIFICATIONS:				
			1. Wall insulation, boards, R8 in 48 buildings.	13. m. DESCRIPTION OF WORK TO BE DONE	14. n. OTHER (SPECIFY)	15. o. CONVERSION	
			2. Wall insulation, batts, R13 in 95 buildings.				
			3. Ceiling insulation, batts, R19 in 28 buildings.				
			4. Ceiling ins. for Quonset huts, batts, R19 in 95 bldgs.				
			5. Weather stripping for doors in 175 buildings.				
			6. Weather stripping for windows in 2 buildings.				
			7. Double pane windows in 28 buildings.				
			8. Storm windows in 140 buildings.				
			9. Translucent sandwich fenestration, (80%) in 7 bldgs.				
			10. Lighting modification, inc. to fir. in 27 buildings.				
			11. Lighting modification, inc. to HPS in 15 buildings.				
SECTION C - BASIS OF REQUIREMENT							
21. QUANTITATIVE DATA (U/M) NA							
22. REQUIREMENT FOR PROJECT							
23. REQUIREMENT FOR PROJECT							
<p>This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping, and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 21.4 mega BTU annual energy savings per thousand dollars.</p> <p>cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 7.4. Total annual energy savings is estimated at 32,188.1 mega BTU. A total dollar savings of \$695,468 per year will result in a simple payback period of 2.2 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.</p>							
24. RELATED PROJECTS NA							

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION CAMP HUMPHREYS - KS 792
5. PROPOSED AUTHORIZATION \$ 314,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 530, 740, 730 550	8. PROGRAM ELEMENT NUMBER NA	9. STATE/COUNTRY KOREA	10. PROJECT NUMBER 11. BUDGET ACCOUNT NUMBER 6100	
12. PROJECT NUMBER \$ 314,000					13. PROJECT TITLE ARCHITECTURAL & UTILITIARIAL MODIFICATIONS	NM CM RM X
SECTION A - DESCRIPTION OF PROJECT						
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY						
15. DESCRIPTION OF WORK TO BE DONE						
16. OTHER (Specify)						
17. TYPE OF DESIGN						
18. QUANTITATIVE DATA (U/M NA)						
19. REQUIREMENT FOR PROJECT						
20. PRIMARY FACILITY						
21. SUPPORTING FACILITIES						
22. TOTAL PROJECT COST \$ 314						
SECTION C - BASIS OF REQUIREMENT						
23. This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping, and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 24.2 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 6.1. Total annual energy savings is estimated at 7,610.5 mega BTU. A total dollar savings of \$158,369 per year will result in a simple payback period of 2.0 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.						
24. RELATED PROJECTS NA						

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP LONG - KS 208, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211, 131, 740, 141, 214 218, 442, 550, 610, 730 219 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 279	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	8482	2.840	238
Wall Insulation, Batts, R13	SF	42045	1.498	(24)
Ceiling Insulation, Batts, R19	SF	19563	1.147	(63)
Ceiling Insulation, Batts, R19	SF	41488	1.368	(22)
Door Weather Stripping	LF	7442	2.661	(57)
Window Weather Stripping	LF	28	2.310	(20)
Window Treatment, Double Pane	SF	95	13.999	(0)
Window Treatment, Storm Window	SF	4002	6.657	(1)
Window Treatment, TSF (80%)	SF	40	29.882	(27)
Lighting Modification, inc. to Flr.	W	865	0.904	(1)
Lighting Modification, inc. to HPS	W	7442	0.728	(5)
Warm Air Furnace (WAF) Timer Installation	PC	19	360.511	(16)
<u>Supporting Facilities</u>				0
Subtotal				238
Contingency (10%)				24

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at Camp Long are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install translucent sandwich fenestration (TSF 80%) where windows need replacement and visibility is not a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 10° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at Camp Long which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.

1. Wall insulation, boards, R8, will be installed in 6 buildings.
2. Wall insulation, batts, R13, will be installed in 20 buildings.

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA	2. DATE 11-19-80								
3. INSTALLATION AND LOCATION CAMP LONG - KS 208, KOREA										
4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS (INCLUDING WARM AIR FURNACES)	ECIP	5. PROJECT NUMBER								
9. COST ESTIMATES (Continued) <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Total Contract Cost</td> <td style="width: 20%; text-align: right;">262</td> </tr> <tr> <td>Supervision, Inspection & Overhead (6.5%)</td> <td style="text-align: right;">17</td> </tr> <tr> <td>Total Request</td> <td style="text-align: right;"><u>279</u></td> </tr> <tr> <td>Installed Equipment - Other Appropriations</td> <td style="text-align: right;">(0)</td> </tr> </table>			Total Contract Cost	262	Supervision, Inspection & Overhead (6.5%)	17	Total Request	<u>279</u>	Installed Equipment - Other Appropriations	(0)
Total Contract Cost	262									
Supervision, Inspection & Overhead (6.5%)	17									
Total Request	<u>279</u>									
Installed Equipment - Other Appropriations	(0)									
10. DESCRIPTION OF PROPOSED CONSTRUCTION (Continued) <ul style="list-style-type: none"> 3. Ceiling insulation, batts, R19 will be installed in 7 buildings. 4. Ceiling insulation, batts, R19 will be installed in 18 buildings. 5. Door weather stripping will be installed in 34 buildings. 6. Window weather stripping will be installed in 1 building. 7. Window treatment, double pane will be installed in 1 building. 8. Window treatment, storm window will be installed in 33 buildings. 9. Window treatment, TSF 80% will be installed in 1 building. 10. Lighting modification, inc. to flr. will be installed in 4 buildings. 11. Lighting modification, inc. to HPS will be installed in 5 buildings. 12. WAF timer will be installed in 14 buildings. 										
11. REQUIREMENT: <u>PROJECT:</u> The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption, as will replacing existing lights with more efficient lighting. Adding timers on warm air furnaces will also save on the heating energy consumed. <u>REQUIREMENT:</u> This project will result in 18.5 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and benefit-to-cost ratio (B/C ratio) of 6.4. Total annual energy savings is estimated at 5,157.0 mega BTU. A total dollar savings of \$136,385 per year will result in a simple payback period of 2.0 years. <u>CURRENT SITUATION:</u> This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). Present conditions permit very substantial energy waste. A base-wide energy audit has been performed, documenting the situation for each building involved and detailing specific conservation measures. <u>IMPACT IF NOT PROVIDED:</u> If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.										

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	3. MILITARY CONSTRUCTION PROJECT DATA		4. INSTALLATION CAMP CARROLL - KS 116
5. PROPOSED AUTHORIZATION		6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 211, 214, 215, 217	8. PROGRAM ELEMENT NUMBER 218, 219
10. PROPOSED APPROPRIATION \$ 1,042,000		11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 6100	9. STATE/COUNTRY KOREA
13. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS				
SECTION A - DESCRIPTION OF PROJECT				
14. 15. 16. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY				
17. DESCRIPTION OF WORK TO BE DONE				
18. WORK will consist of the following modifications:				
1. Wall insulation, boards, R8 in 10 buildings.				
2. Wall insulation, batts, R13 in 6 buildings.				
3. Ceiling insulation, batts, R19 in 13 buildings.				
4. Ceiling ins. for Quonset huts, batts, R19 in 6 bldgs.				
5. Weather stripping for doors in 23 buildings.				
6. Weather stripping for windows in 2 buildings.				
7. Double pane windows in 2 buildings.				
8. Storm windows in 17 buildings.				
9. Lighting modification, inc. to flr. in 14 buildings.				
10. Lighting modification, inc. to HPS in 2 buildings.				
11. Lower ceilings in 3 buildings.				
12. Lower crane in 1 building.				
20. PRIMARY FACILITY				
21. SUPPORTING FACILITIES				
22. TOTAL PROJECT COST * 1042				
SECTION B - COST ESTIMATES				
23. QUANTITATIVE DATA				
24. REQUIREMENT FOR PROJECT				
25. BASIS OF REQUIREMENT				
26. TOTAL REQUIREMENT (U/M) NA				
27. EXISTING SUBSTANDARD ()				
28. EXISTING ADEQUATE ()				
29. FUNDED, NOT IN INVENTORY ()				
30. ADEQUATE ASSETS (C + d)				
31. UNFUNDED PRIOR AUTHORIZATION FUNDING AUTHORIZED FUNDING PROVIDED				
32. INCLUDED IN FY _____ PROGRAM				
33. DEFICIENCY (a - b - c - g)				
34. RELATED PROJECTS NA				

This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping, and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 17.8 mega BTU annual energy savings per thousand dollars cost, a benefit-to-cost ratio (B/C ratio) of 8.2. Total annual energy savings is estimated at 18,531.6 mega BTU. A total dollar savings of \$408,209 per year will result in a simple payback period of 2.6 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.

FOR OFFICIAL USE ONLY WHEN DATA IS ENTERED)

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION CAMP CARROLL - KS 116
5. PROPOSED AUTHORIZATION \$ 789,000		6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 131, 141, 224, 441, 442, 610, 171	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY KOREA	
10. PROPOSED APPROPRIATION \$ 789,000		11. BUDGET ACCOUNT NUMBER 6100		12. PROJECT NUMBER 6100	13. PROJECT TITLE ARCHITECTURAL & FURNITURE MODIFICATIONS	NM CM RM X
SECTION A - DESCRIPTION OF PROJECT						
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY						
15. DESCRIPTION OF WORK TO BE DONE						
16. Work will consist of the following modifications: 1. Wall insulation, boards, R8 in 21 buildings. 2. Wall insulation, batts, R13 in 8 buildings. 3. Ceiling insulation, batts, R19 in 20 buildings. 4. Ceiling insulation for Quonset huts, batts, R19 in 6 buildings. 5. Weather stripping for doors in 34 buildings. 6. Weather stripping for windows in 6 buildings. 7. Storm windows in 19 buildings. 8. Lighting modification, inc. to flr in 13 buildings.						
17. TYPE OF DESIGN						
18. OTHER (Specify)						
19. REPLACEMENT						
20. PRIMARY FACILITY						
21. SUPPORTING FACILITIES						
22. TOTAL PROJECT COST \$ 789						
SECTION B - COST ESTIMATES						
23. QUANTITATIVE DATA (U/M NA)						
24. REQUIREMENT FOR PROJECT						
25. REQUIREMENT FOR PROJECT						
This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 19.2 mega BTU annual energy savings per thousand dollars cost, (E/C ratio); and a benefit-to-cost ratio (B/C ratio) of 9.0. Total annual energy savings is estimated at 15,182.1 mega BTU. A total dollar savings of \$337,003 per year will result in a simple payback period of 2.3 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.						

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1983	3. DEPARTMENT ARMY			4. INSTALLATION CAMP HENRY - KS 160		
5. PROPOSED AUTHORIZATION \$ 792,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 211, 141, 214, 610, 740, 131, 219	8. PROGRAM ELEMENT NUMBER 12. PROJECT NUMBER \$ 792,000	9. STATE/COUNTRY KOREA			
10. PROPOSED APPROPRIATION \$ 792,000			11. BUDGET ACCOUNT NUMBER 6100	13. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATIONS	NM CM RM X		
SECTION A - DESCRIPTION OF PROJECT							
SECTION B - COST ESTIMATES							
14. TYPE OF CONSTRUCTION a. PERMANENT b. SEMI-PERMANENT c. TEMPORARY d. COOLING	15. NO. OF BLDGS. 58 e. DESIGN CAPACITY f. GROSS AREA g. CAP. h. COOLING	16. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY i. SEE ATTACHED LIST j. WIDTH k. GROSS AREA l. CAP. m. NA	17. PRIMARY FACILITY a. WALL INSULATION, BOARDS, R8 b. WALL INSULATION, BATTs, R13 c. CEILING INSULATION, BATTs, R19 d. CEILING INSULATION, BATTs, R19 e. FLOOR/BASEMENT INS. - BATTs, R13 f. DOOR WEATHER STRIPPING g. WINDOW WEATHER STRIPPING h. WINDOW TREATMENT, DOUBLE PANE i. WINDOW TREATMENT, STORM WINDOW j. WINDOW TREATMENT, TSE 80% k. LIGHTING MOD., INC TO FLR l. LIGHTING MOD., INC TO HPS	18. UNIT SF SF SF SF SF LE LE SF SF SF SF SF W W	19. QUANTITY 70145 72342 86468 88191 78600 8662 1392 2323 14362 290 10490 6097	20. UNIT COST \$ 2,894 1,525 1,169 1,393 2,894 2,711 2,352 14,261 6,782 30,441 0,921 0,742	21. COST (\$000) 203 110 101 123 74 24 3 33 97 9 10 5 0 0 \$ 792
22. TOTAL PROJECT COST \$ 792	SECTION C - BASIS OF REQUIREMENT						
23. QUANTITATIVE DATA (NM NA)	SECTION C - BASIS OF REQUIREMENT						
24. REQUIREMENT FOR PROJECT							
25. REQUIREMENT FOR PROJECT							
<p>This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, floor/basement insulation, window treatment, weather stripping and lighting modifications will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 20.4 mega BTU annual energy savings per thousand dollars cost (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 7.6. Total annual energy savings is estimated at 16,127.3 mega BTU. A total dollar savings of \$355,254 per year will result in a simple payback period of 2.2 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.</p>							
a. TOTAL REQUIREMENT b. EXISTING STANDARD c. EXISTING INADEQUATE d. FUNDED, NOT IN INVENTORY e. INADEQUATE ASSETS (c + d)							
f. FUNDED g. UNFUNDED PRIOR AUTHORIZATION h. INCLUDED IN FY PROGRAM i. DEFICIENCY (e - b - f - g)							
j. RELATED PROJECTS NA							

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80	2. FISCAL YEAR 1982	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION CAMP WALKER - FH - KS 300
5. PROPOSED AUTHORIZATION \$ 47,000	6. PRIOR AUTHORIZATION P.L.	7. CATEGORY CODE NUMBER 711	8. PROGRAM ELEMENT NUMBER NM	9. STATE/COUNTRY KOREA		
10. PROPOSED APPROPRIATION \$ 47,000	11. BUDGET ACCOUNT NUMBER 6100	12. PROJECT NUMBER 6100	13. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS	NM	CM	RM X
SECTION A - DESCRIPTION OF PROJECT						
14. TYPE OF CONSTRUCTION a. PERMANENT b. SEMI-PERMANENT c. TEMPORARY	15. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY a. NO. OF BLDGS. 49 b. DESIGN CAPACITY c. COOLING d. CAP.	16. SEE ATTACHED LIST a. WIDTH NA b. GROSS AREA NA c. COST (\$) d. CAP.	17. DESCRIPTION OF WORK TO BE DONE Work will consist of the following modifications: 1. Wall insulation, boards, R8 in 6 dwelling units. 2. Weather stripping for doors in 96 dwelling units. 3. Double pane windows in 2 dwelling units.	18. PRIMARY FACILITY a. WALL INSULATION, BOARDS, R8 b. DOOR WEATHER STRIPPING c. WINDOW TREATMENT, DOUBLE PANE	19. QUANTITY SF (7062) LF (7643) SF (934)	20. UNIT COST \$ 2,520 \$ 2,361 \$ 12,419
15. TYPE OF WORK a. NEW FACILITY b. ADDITION c. ALTERATION d. CONVERSION	16. OTHER (Specify)	17. REQUIREMENT FOR PROJECT	21. SUPPORTING FACILITIES	22. TOTAL PROJECT COST \$ 47		
SECTION B - COST ESTIMATES						
23. QUANTITATIVE DATA (UM NA)	24. RELATED PROJECTS NA	SECTION C - BASIS OF REQUIREMENT				
a. TOTAL REQUIREMENT b. EXISTING SUBSTANDARD c. EXISTING ADEQUATE	d. FUNDED, NOT IN INVENTORY e. INEQUATE ASSETS (c + d)	f. UNFUNDED PRIOR AUTHORIZATION g. INCLUDED IN FY _____ PROGRAM h. DEFICIENCY (• - - I - g)	25. REQUIREMENT FOR PROJECT	This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 20.5 mega BTU annual energy savings per thousand dollars cost (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 5.9. Total annual energy savings is estimated at 972.1 mega BTU. A total dollar savings of \$17,533 per year will result in a simple payback period of 2.7 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.		

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. DATE 11-13-80.	2. FISCAL YEAR 1983	MILITARY CONSTRUCTION PROJECT DATA			3. DEPARTMENT ARMY	4. INSTALLATION CAMP WALKER - KS 300	
5. PROPOSED AUTHORIZATION		6. PRIOR AUTHORIZATION	7. CATEGORY CODE NUMBER	8. PROGRAM ELEMENT NUMBER	9. STATE/COUNTRY KOREA		
\$ 382,000		P.L.	211,610,740,131,141, 214,219,550,730,442				
10. PROPOSED APPROPRIATION		11. BUDGET ACCOUNT NUMBER	12. PROJECT NUMBER	13. PROJECT TITLE Architectural Modifications	NM	CM	RM X
\$ 382,000		6100					
SECTION A - DESCRIPTION OF PROJECT							
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY							
15. TYPE OF CONSTRUCTION		16. SEE ATTACHED LIST		17. DESCRIPTION OF WORK TO BE DONE			
a. PERMANENT		a. NO. OF BLDGS	45	a. WALL INSULATION, BOARDS, R=8	SF	1,58821	\$ 382
b. SEMI-PERMANENT		b. DESIGN CAPACITY	NA	b. WALL INSULATION, BATTs, R=13	SF	1,3632	170
c. TEMPORARY		c. COOLING	NA	c. CEILING INSULATION, BATTs, R=19	SF	1,50317	21
18. DESCRIPTION OF WORK TO BE DONE		19. DESCRIPTION OF WORK TO BE DONE		d. CEILING INSULATION, BATTs, R=19	SF	1,769	59
a. NEW FACILITY		Work will consist of the following modifications:		e. DOOR WEATHER STRIPPING	LF	1,393	38
b. ADDITION		1. Wall insulation, boards, R8 in 30 buildings.		f. WINDOW WEATHER STRIPPING	LF	5874	16
c. ALTERATION		2. Wall insulation, batts, R13 in 7 buildings.		g. WINDOW TREATMENT, DOUBLE PANE	LE	1336	3
d. CONVERSION		3. Ceiling insulation, batts, R19 in 16 buildings.		h. WINDOW TREATMENT, STORM WINDOW	SE	1016	15
e. OTHER (SPECIFY)		4. Ceiling ins. for Quonset huts, batts, R19 in 7 bldgs.		i. LIGHTING MOD., INC. TO FLR	W	7561	51
f. REPLACEMENT		5. Weather stripping for doors in 43 buildings.		j. LIGHTING MOD., INC. TO HPS	W	6,726	6
17. TYPE OF DESIGN		6. Weather stripping for windows in 8 buildings.			W	4,800	742
a. STANDARD DESIGN		7. Double pane windows in 4 buildings.				0	4
b. SPECIAL DESIGN		8. Storm windows in 28 buildings.					1
c. DRAWING NO.		9. Lighting modification, inc. to fir. in 4 buildings.					0
10. Lighting modification, inc. to HPS in 1 building.							
SECTION B - COST ESTIMATES							
20. PRIMARY FACILITY							
21. SUPPORTING FACILITIES		22. TOTAL PROJECT COST		UNIT COST	QUANTITY	UNIT COST	QUANTITY
23. QUANTITATIVE DATA (U/M NA)		24. REQUIREMENT FOR PROJECT		\$		\$	
a. TOTAL REQUIREMENT		25. BASIS OF REQUIREMENT					
b. EXISTING SUBSTANDARD		26. REQUIREMENT		This project is required to meet stated goals of energy use reduction. It is submitted as part of the energy conservation investment program (ECIP). The addition of wall and ceiling insulation, window treatment and weather stripping will reduce winter heat loss and/or summer heat gain, thereby reducing energy consumption. This project will result in 20.7 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C ratio) of 8.6. Total annual energy savings is estimated at 7,927.4 mega BTU. A total dollar savings of \$172,737 per year will result in a simple payback period of 2.2 years. If this project is not effected, energy will continue to be needlessly wasted, contrary to national goals. This project has been reviewed and it has been determined that an EIS, pursuant to PL91-190 is not required.			
c. EXISTING ADEQUATE		27. APPROVAL					
d. FUNDED, NOT IN INVENTORY		28. AUTHORIZATION					
e. UNFUNDING PRIOR AUTHORIZATION		29. PROGRAM					
f. INCLUDED IN FY PROGRAM		30. DEFICIENCY (• - - • - - •)					
g. RELATED PROJECTS		31. NA					

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION HIALEAH FH - KS 456, KOREA		4. PROJECT TITLE ARCHITECTURAL STRUCTURAL MODIFICATIONS (INCLUDING DOMESTIC HOT WATER HEATERS)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 711 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 343	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	19395	2.840	293 (55)
Ceiling Insulation, Batts, R19	SF	12063	1.147	(14)
Door Weather Stripping	LF	2202	2.661	(6)
Window Treatment, Storm Window	SF	15236	6.657	(101)
Hot Water (H.W.) Heater Replacement (US)	PC	50	2342.597	(117)
<u>Supporting Facilities</u>				0
Subtotal				293
Contingency (10%)				29
Total Contract Cost				322
Supervision, Inspection & Overhead (6.5%)				21
Total Request				343
Installed Equipment - Other Appropriations				(0)

10. DESCRIPTION OF PROPOSED CONSTRUCTION

Buildings at Hialeah-FH are to be modified to achieve improved energy conservation.

Install wall and ceiling insulation to increase R value. Install storm windows where existing windows are in good condition. Install door weather stripping in order to decrease infiltration. Replace hot water heaters to reduce energy consumption.

Insulation will satisfy criteria in DOD Manual 4270.1-M.

No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.

Lists of individual buildings at Hialeah-FH which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.

Wall insulation boards, R8, will be installed in 18 dwelling units.
 Ceiling insulation batts, R19, will be installed in 16 dwelling units.
 Door weather stripping will be installed in 68 dwelling units.
 Window treatment storm window will be installed in 68 dwelling units.
 H. W. heater replacement (US) will be installed in 50 dwelling units.

1. COMPONENT ARMY	FY 1984 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION HIALEAH - KS 456, KOREA		4. PROJECT TITLE ARCHITECTURAL & STRUCTURAL MODIFICATION (INCLUDING WARM AIR FURNACE)		
5. PROGRAM ELEMENT	6. CATEGORY CODE 211,131,214,740, 218,442,510,610,730	7. PROJECT NUMBER	8. PROJECT COST (\$000) 572	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
<u>Primary Facility</u>				
Wall Insulation, Boards, R8	SF	58989	2.840	488
Wall Insulation, Batts, R13	SF	32996	1.498	(49)
Ceiling Insulation, Batts, R19	SF	86357	1.147	(99)
Ceiling Insulation, Batts, R19	SF	23504	1.368	(32)
Door Weather Stripping	LF	8524	2.661	(23)
Window Weather Stripping	LF	1762	2.310	(4)
Window Treatment, Double Pane	SF	781	13.999	(11)
Window Treatment, Storm Window	SF	6531	6.657	(44)
Lighting Modification, inc. to flr.	W	7643	0.904	(7)
Lighting Modification, inc. to HPS	W	7442	0.728	(5)
Warm Air Furnace (WAF) Timer Installation	PC	54	860.511	(47)
<u>Supporting Facilities</u>				0
Subtotal				488
Contingency (10%)				49
Total Contract Cost				537
Supervision, Inspection and Overhead (6.5%)				35
Total Request				572
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Hialeah are to be modified to achieve improved energy conservation.				
Install wall and ceiling insulation to increase R value. Install double pane windows where windows need replacement due to age and deterioration and/or complete visibility is a requirement. Install storm windows where existing windows are in good condition. Install door and window weather stripping in order to decrease infiltration. Replace existing lights with more efficient lighting to reduce electrical consumption. Install timers on warm air furnaces for a 100° setback during unoccupied hours for an approximate 30% savings of the heating energy consumed.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Hialeah which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
<ol style="list-style-type: none"> 1. Wall insulation, boards, R=8 will be installed in 16 buildings. 2. Wall insulation, batts, R=13 will be installed in 20 buildings. 				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON - KS 948 ,KOREA		4. PROJECT TITLE MODIFICATION FOR INSTALLATION OF CLOCK THERMOSTAT W/ OUTSIDE AIR THERMOSTAT OVERRIDE		
5. PROGRAM ELEMENT	6. CATEGORY CODE 131,141,171,214,217,218, 219,510,530,540,550,610, 730,740,841,842 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 173	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Clock Thermostat with Outside Air Thermostat Override	EA	171	861.40	147 (147)
Supporting Facilities				0
Subtotal				147
Contingency (10%)				15
Total Contract Cost				162
Supervision, Inspection & Overhead (6.5%)				11
Total Request				173
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Install 7-day time clock with set back feature, spring back-up (in case of power failure) and outdoor air thermostat override to reduce energy consumption on all warm-air furnaces.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Clock thermostats with outside air thermostat override will be installed in 148 buildings.				

1. COMPONENT ARMY	FY 1984 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON - KS 948, KOREA		4. PROJECT TITLE MODIFICATION FOR DISHWASHER HEAT RECOVERY ECIP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 72210	7. PROJECT NUMBER	8. PROJECT COST (\$000) 19	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Dishwasher Waste Heat Recovery System, 1000-Man Mess	EA	2	8130	16 (16)
Supporting Facilities				0
Subtotal				16
Contingency (10%)				2
Total Contract Cost				18
Supervision, Inspection and Overhead (6.5%)				1
Total Request				19
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Installation of this system, which includes a cleanable heat exchanger, dishwasher strainer and pump, potable water pump, associated piping, valves, insulation and controls will recover heat from the dishwasher which would be rejected into the sewer. The recovered heat will be returned to the domestic hot water boiler, thus reducing oil consumption.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Dishwasher waste heat recovery systems will be installed in 2 buildings.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON - KS 948, KOREA		4. PROJECT TITLE MODIFICATION FOR COMMISSARY WASTE HEAT RECOVERY ECIP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 74021	7. PROJECT NUMBER	8. PROJECT COST (\$000) 52	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST (\$000)	COST (\$000)
Primary Facility				45
Heat Transfer Coil and Associated Refrigerant Lines and Controls	EA	1	44,860	(45)
Supporting Facilities				0
Subtotal				45
Contingency (10%)				4
Total Contract Cost				49
Supervision, Inspection And Overhead (6.5%)				3
Total Request				52
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Install a heat transfer coil in the existing York air handler and connect to the nine R502 refrigerant compressors in the commissary building S7003. This project also includes the necessary controls and modifications to the existing facility.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Heat transfer coil and associated refrigerant lines and controls will be installed in 1 building.				
11. REQUIREMENT: PROJECT: Installation of a heat recovery coil will save energy by utilizing the				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON - KS 948, KOREA		4. PROJECT TITLE MODIFICATION FOR CHILLER REPLACEMENT ECP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 89045	7. PROJECT NUMBER	8. PROJECT COST (\$000) 382	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Centrifugal Chiller, 400 ton	EA	1	325,500	326 (326)
Supporting Facilities				0
Subtotal				326
Contingency (10%)				33
Total Contract Cost				359
Supervision, Inspection & Overhead (6.5%)				23
Total Request				382
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Installation of a 400-ton centrifugal chiller to replace the existing lithium bromide absorption chiller. This will result in an increase in electrical consumption, but a decrease in fuel oil consumption for a net reduction in source energy and operating costs. The supporting boilers are to be abandoned in place as possible back up for the heating system. (Refer to Boiler Modifications at Yongsan Garrison - KS 948, FY83)				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
A 400-ton centrifugal chiller will be installed in one building.				

1. COMPONENT ARMY	FY 1984 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON (FH) - KS 948, KOREA		4. PROJECT TITLE MODIFICATION FOR DOMESTIC HOT WATER HEATER REPLACE- MENT		
5. PROGRAM ELEMENT	6. CATEGORY CODE 711 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 668	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Oil Fired Water Heaters and Associated Trim	EA	243	2343.9	570 (570)
Supporting Facilities				0
Subtotal				570
Contingency (10%)				57
Total Contract Cost				627
Supervision, Inspection And Overhead (6.5%)				41
Total Request				668
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Installation of oil fired water heaters and associated trim to replace electric water heaters, thereby reducing electrical consumption.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Oil fired water heaters and associated trim will be installed in 238 dwelling units.				
11. REQUIREMENT:				
PROJECT: The addition of oil fired water heaters and associated trim to replace electric water heaters will reduce electrical consumption.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION YONGSAN GARRISON - KS 948, KOREA		4. PROJECT TITLE MODIFICATION FOR ENERGY MONITOR & CONTROL SYSTEM		
5. PROGRAM ELEMENT	6. CATEGORY CODE 740, 510, 610, 620 821 SERIES	7. PROJECT NUMBER	8. PROJECT COST (\$000) 1,691	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Energy Monitor and Control System	EA	1	1,444	1,444 (1,444)
Supporting Facilities			0	0
Subtotal			1,444	1,444
Contingency (10%)			144	144
Total Contract Cost			1,588	1,588
Supervision, Inspection and Overhead (6.5%)			103	103
Total Request			1,691	1,691
Installed Equipment - Other Appropriations			(0)	(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Yongsan Garrison are to be modified to achieve improved energy conservation.				
Install Energy Monitor and Control System (EMCS) to control and minimize energy consumption. Useful management data will be reported to reduce manual requirements and report malfunctions as well as minimizing energy consumption during building non-use hours.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Yongsan Garrison which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
A computer controlled Energy Monitor and Control System will be installed in 39 buildings.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80	
3. INSTALLATION AND LOCATION K-16 AIRFIELD - KS 508, KOREA		4. PROJECT TITLE MODIFICATION FOR INSTALLATION OF CLOCK THERMOSTAT W/ OUTSIDE AIR THERMOSTAT OVERRIDE			
5. PROGRAM ELEMENT	6. CATEGORY CODE 740,141,131,730, 219,214,550 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 8		
9. COST ESTIMATES					
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)	
Primary Facility Clock Thermostats with Outside Air Thermostat Override	EA	7	861.40	6 (6)	
Supporting Facilities				0	
Subtotal				6	
Contingency (10%)				1	
Total Contract Cost				7	
Supervision, Inspection & Overhead (6.5%)				1	
Total Request				8	
Installed Equipment - Other Appropriations				(0)	
10. DESCRIPTION OF PROPOSED CONSTRUCTION					
Buildings at K-16 Airfield are to be modified to achieve improved energy conservation.					
Install 7-daytime clock with setback feature, spring back-up (in case of power failure) and outdoor air thermostat override to reduce energy consumption on all warm-air furnaces.					
Insulation will satisfy criteria in DOD Manual 4270.1-M.					
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.					
Lists of individual buildings at K-16 Airfield which are to receive each modification are attached to this form. Types of construction are indicated on the buildings lists.					
Clock thermostat with outside thermostat override will be installed in 7 buildings.					

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HUMPHREYS - KS 792, KOREA		4. PROJECT TITLE INSTALLATION OF CLOCK THERMOSTAT WITH OUTSIDE AIR THERMOSTAT OVERRIDE MODIFICATION		
5. PROGRAM ELEMENT	6. CATEGORY CODE 740,214,131,219,218,610, 217,141,310,211,212,133 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 94	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Clock Thermostat With Outside Air Thermostat Override	EA	93	861.40	80 (80)
Supporting Facilities Subtotal				0 80
Contingency (10%)				8
Total Contract Cost				88
Supervision, Inspection & Overhead (6.5%)				6
Total Request				94
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
<p>Buildings at Camp Humphreys are to be modified to achieve improved energy conservation.</p> <p>Install 7-day time clock with setback feature, spring back-up (in case of power failure) and outdoor air thermostat override to reduced energy consumption.</p> <p>Insulation will satisfy criteria in DOD Manual 4270.1-M.</p> <p>No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.</p> <p>Lists of individual buildings at Camp Humphreys which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.</p> <p>Clock thermostats with outside air thermostat override will be installed in 88 buildings on all warm-air furnaces.</p>				
11. REQUIREMENT:				
<p><u>PROJECT:</u> The addition of 7-day time clocks with setback feature, spring back-up (in case of power failure) and outdoor air thermostat override to reduce energy consumption.</p> <p><u>REQUIREMENT:</u> This project will result in 50.8 mega BTU annual energy savings per thousand dollars cost, (E/C ratio), and a benefit-to-cost ratio (B/C</p>				

FOR OFFICIAL USE ONLY WHEN DATA IS ENTERED

1. DATE 11-19-80	2. FISCAL YEAR 1983	- MILITARY CONSTRUCTION PROJECT DATA				3. DEPARTMENT ARMY	4. INSTALLATION CAMP HUMPHREYS - KS 792
5. PROPOSED AUTHORIZATION \$ 125,000		6. PRIOR AUTHORIZATION P.L. NONE	7. CATEGORY CODE NUMBER 722 and 821	8. PROGRAM ELEMENT NUMBER 12. PROJECT NUMBER 6100	9. STATE/COUNTRY KOREA	13. PROJECT TITLE BOILER MODIFICATION	
SECTION A - DESCRIPTION OF PROJECT							
14. PHYSICAL CHARACTERISTICS OF PRIMARY FACILITY							
15. TYPE OF CONSTRUCTION		16. NO. OF BLDGS. 2 SEE ATTACHED LIST		17. GROSS AREA		18. d. WIDTH NA	
a. PERMANENT X		e. DESIGN CAPACITY NA		f. GROSS AREA NA		g. BOILER O ₂ TRIM CONTROL EA	
b. SEMI-PERMANENT		g. COOLING NA		h. CAP. NA		h. SUPPORTING FACILITIES (1)	
c. TEMPORARY		i. DESCRIPTION OF WORK TO BE DONE		j. COST NA		i. 21. SUPPORTING FACILITIES (1)	
19. DESCRIPTION OF WORK TO BE DONE							
Install 0 ₂ trim controls on 5 boilers in the buildings noted. The project includes installation of an O ₂ sensor, analyser, controller, control panel and modification of modulating motor linkage for air/fuel control on each boiler.							
Cat. Code							
20. PRIMARY FACILITY		21. SUPPORTING FACILITIES		22. TOTAL PROJECT COST		SECTION B - COST ESTIMATES	
23. QUANTITATIVE DATA (U/M NA)		24. REQUIREMENT FOR PROJECT		25. REQUIREMENT FOR PROJECT		SECTION C - BASIS OF REQUIREMENT	
a. TOTAL REQUIREMENT ()		b. EXISTING SUBSTANDARD ()		c. EXISTING ADEQUATE ()		d. FUNDED, NOT IN INVENTORY ()	
e. ADEQUATE ASSETS (c + d) ()		f. FUNDED PRIOR AUTHORIZATION ()		g. INCLUDED IN FY PROGRAM ()		h. DEFICIENCY (e - d - f - g) ()	
i. RELATED PROJECTS NA		j. DEFICIENCY (e - d - f - g) ()		k. DEFICIENCY (e - d - f - g) ()		l. DEFICIENCY (e - d - f - g) ()	

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HUMPHREYS - KS 792, KOREA		4. PROJECT TITLE MODIFICATION FOR DISHWASHER HEAT RECOVERY ECP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 72210	7. PROJECT NUMBER	8. PROJECT COST (\$000) 28	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Dishwasher Waste Heat Recovery Systems, 1000-Man Mess	EA	3	8127	24 (24)
Supporting Facilities				0
Subtotal				24
Contingency (10%)				2
Total Contract Cost				26
Supervision, Inspection and Overhead (6.5%)				2
Total Request				28
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Humphreys are to be modified to achieve improved energy conservation.				
Installation of this system, which includes a cleanable heat exchanger, dishwater strainer and pump, potable water pump, associated piping, valves, insulation and controls, will recover heat from the dishwasher which would be rejected into the sewer.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Humphreys which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Dishwasher waste heat recovery systems will be installed in 3 buildings.				
11. REQUIREMENT: <u>PROJECT:</u> The addition of this system will recover heat from the dishwasher				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP CARROLL - KS 116, KOREA		4. PROJECT TITLE MODIFICATION FOR INSTALLATION OF CLOCK THERMOSTAT W/ OUTSIDE AIR THERMOSTAT OVERRIDE		
5. PROGRAM ELEMENT	6. CATEGORY CODE 740,610,872,141,841,219, 730,214,843,171,217,218, Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 43	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Clock Thermostat with Outside Air Thermostat Override	EA	42	861.40	36 (36) 0
Supporting Facilities Subtotal Contingency (10%) Total Contract Cost Supervision, Inspection & Overhead (6.5%) Total Request Installed Equipment - Other Appropriations				36 4 40 3 43 (0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION Buildings at Camp Carroll are to be modified to achieve improved energy conservation. Install 7-day time clock with set back feature, spring back-up (in case of power failure) and outdoor air thermostat override to reduce energy consumption on all warm-air furnaces. Insulation will satisfy criteria in DOD Manual 4270.1-M. No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped. Lists of individual buildings at Camp Carroll which are to receive each modification are attached to this form. Types of construction are indicated on the building list. Clock thermostat with outside thermostat override will be installed in 42 buildings.				
11. REQUIREMENT: PROJECT: The addition of 7-day time clock with setback feature, spring back-up (in case of power failure) and outdoor air thermostat override				

FOR OFFICIAL USE ONLY (WHEN DATA IS ENTERED)

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP CARROLL - KS 116, KOREA		4. PROJECT TITLE MODIFICATIONS FOR DISHWASHER HEAT RECOVERY ECIP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 72210	7. PROJECT NUMBER	8. PROJECT COST (\$000) 10	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Dishwasher Waste Heat Recovery System (1000-Man Mess)	EA	1	8130	8 (8)
Supporting Facilities				0
Subtotal				8
Contingency (10%)				1
Total Contract Cost				9
Supervision, Inspection and Overhead (6.5%)				1
Total Request				10
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Carroll are to be modified to achieve improved energy conservation.				
Installation of this system, which includes a cleanable heat exchanger, dishwasher strainer and pump, potable water pump, associated piping, valves, insulation and controls will recover heat from the dishwasher which would be rejected into the sewer. The recovered heat will be returned to the domestic hot water boiler, thus reducing oil consumption.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Carroll which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Dishwasher waste heat recovery system will be installed in one building.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP HENRY - KS 160, KOREA		4. PROJECT TITLE MODIFICATION FOR INSTALLATION OF CLOCK THERMOSTAT WITH OUTSIDE AIR THERMOSTAT OVERRIDE		
5. PROGRAM ELEMENT	6. CATEGORY CODE 610,740,219,141,131, 730,214,171 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 78	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Clock Thermostats with outside air thermostat override	EA	77	861.40	66 (66) 0
Supporting Facilities				66
Subtotal				7
Contingency (10%)				7.3
Total Contract Cost				5
Supervision, Inspection & Overhead (6.5%)				78
Total Request Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Henry are to be modified to achieve improved energy conservation.				
Install 7-day time clock with setback feature, spring back-up (in case of power failure) and outdoor air thermostat override on all warm-air furnaces.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Henry which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Clock thermostats with outside air thermostat override will be installed in 52 buildings.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP WALKER - KS 300, KOREA		4. PROJECT TITLE MODIFICATION FOR INSTALLATION OF CLOCK THERMOSTAT WITH OUTSIDE AIR THERMOSTAT OVERRIDE		
5. PROGRAM ELEMENT	6. CATEGORY CODE 730,141,610,740,540, 131,550,841,872,811, 211,214,530,219, Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 48	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Clock thermostats with outside air thermostat override	EA	48	861.40	41 (41) 0
Supporting Facilities Subtotal				41
Contingency (10%)				4
Total Contract Cost				45
Supervision, Inspection & Overhead (6.5%)				3
Total Request Installed Equipment - Other Appropriations				48 (0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Walker are to be modified to achieve improved energy conservation.				
Install 7-day time clock with set-back feature, spring back-up (in case of power failure) and outdoor air thermostat override on all warm-air furnaces.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Walker which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Clock thermostats with outside air thermostat override will be installed in 41 buildings.				
11. REQUIREMENT: PROJECT: The addition of 7-day time clocks with set-back feature, spring back-up (in case of power failure) and outdoor air thermostat override will reduce energy consumption.				

1. COMPONENT ARMY	FY 19 84 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP WALKER - KS 300, KOREA		4. PROJECT TITLE MODIFICATION FOR DISHWASHER HEAT RECOVERY SCIP		
5. PROGRAM ELEMENT	6. CATEGORY CODE 72210	7. PROJECT NUMBER	8. PROJECT COST (\$000) 10	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Dishwasher Waste Heat Recovery Systems, 1000-Man Mess	EA	1	8130	8 (8)
Supporting Facilities				0
Subtotal				8
Contingency (10%)				1
Total Contract Cost				9
Supervision, Inspection and Overhead (6.5%)				1
Total Request				10
Installed Equipment - Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Walker are to be modified to achieve improved energy conservation.				
Installation of this system, which includes a cleanable heat exchanger, dishwasher strainer and pump, potable water pump, associated piping, valves, insulation and controls, will recover heat from the dishwasher which would be rejected into the sewer.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Walker which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Dishwasher waste heat recovery system will be installed in 1 building.				

1. COMPONENT ARMY	FY 1984 MILITARY CONSTRUCTION PROJECT DATA			2. DATE 11-19-80
3. INSTALLATION AND LOCATION CAMP WALKER (FH) - KS 300, KOREA		4. PROJECT TITLE MODIFICATION FOR DOMESTIC HOT WATER HEATER REPLACEMENT		
5. PROGRAM ELEMENT	6. CATEGORY CODE 711 Series	7. PROJECT NUMBER	8. PROJECT COST (\$000) 264	
9. COST ESTIMATES				
ITEM	U/M	QUANTITY	UNIT COST	COST (\$000)
Primary Facility Oil Fired Water Heaters and Associated Trim	EA	96	2343.9	225 (225)
Supporting Facilities				0
Subtotal				225
Contingency (10%)				23
Total Contract Cost				248
Supervision, Inspection and Overhead (6.5%)				16
Total Request				264
Installed Equipment - Other Appropriations				(0)
10. DESCRIPTION OF PROPOSED CONSTRUCTION				
Buildings at Camp Walker are to be modified to achieve improved energy conservation.				
Installation of oil fired water heaters and associated trim to replace electric water heaters, thereby reducing electrical consumption.				
Insulation will satisfy criteria in DOD Manual 4270.1-M.				
No provisions for the handicapped will be made because the scope of the project is in no way applicable to the handicapped.				
Lists of individual buildings at Camp Walker which are to receive each modification are attached to this form. Types of construction are indicated on the building lists.				
Oil fired water heaters and associated trim will be installed in 96 dwelling units.				
11. REQUIREMENT:				
PROJECT: The addition of oil fired water heaters and associated trim to replace electric water heaters, will reduce electrical consumption.				